LOGISTICS | INDUSTRY DIGITAL PLAN

A Guide for Small and Medium Enterprises (SMEs) to Assess Their Digital Readiness and Opportunities to Go Digital

In support of:

SG:DIGITAL

In collaboration with:

SKILLSfuture SG

MINISTRY OF MANPOWER

SUPPLY CHAIN MANAGEMENT CENTRE OF INNOVATION REPUBLIC POLYTECHNIC

Co-led by:

Enterprise Singapore

Supported by:

sta

SINGAPORE LOGISTICS ASSOCIATION

THE SINGAPORE AIRCARGO AGENTS ASSOCIATION

CDAS

Contents

01 Singapore's Logistics Sector

Singapore's Logistics sector, which comprises the contract logistics, freight forwarding and land transportation sub-sectors, plays a key role in enabling Singapore to be a globally competitive economy and supporting our domestic needs. In 2018, the Logistics sector contributed to 1.4% of Singapore's GDP and employed 2.3% of Singapore's workforce.

Employment contribution:
86,300 employees
[2.3% of total SG workforce]

GDP contribution:
S$6.8 Billion
Value Added
[1.4% of GDP]

Logistics Productivity
(Value Added/Worker):
S$78,400
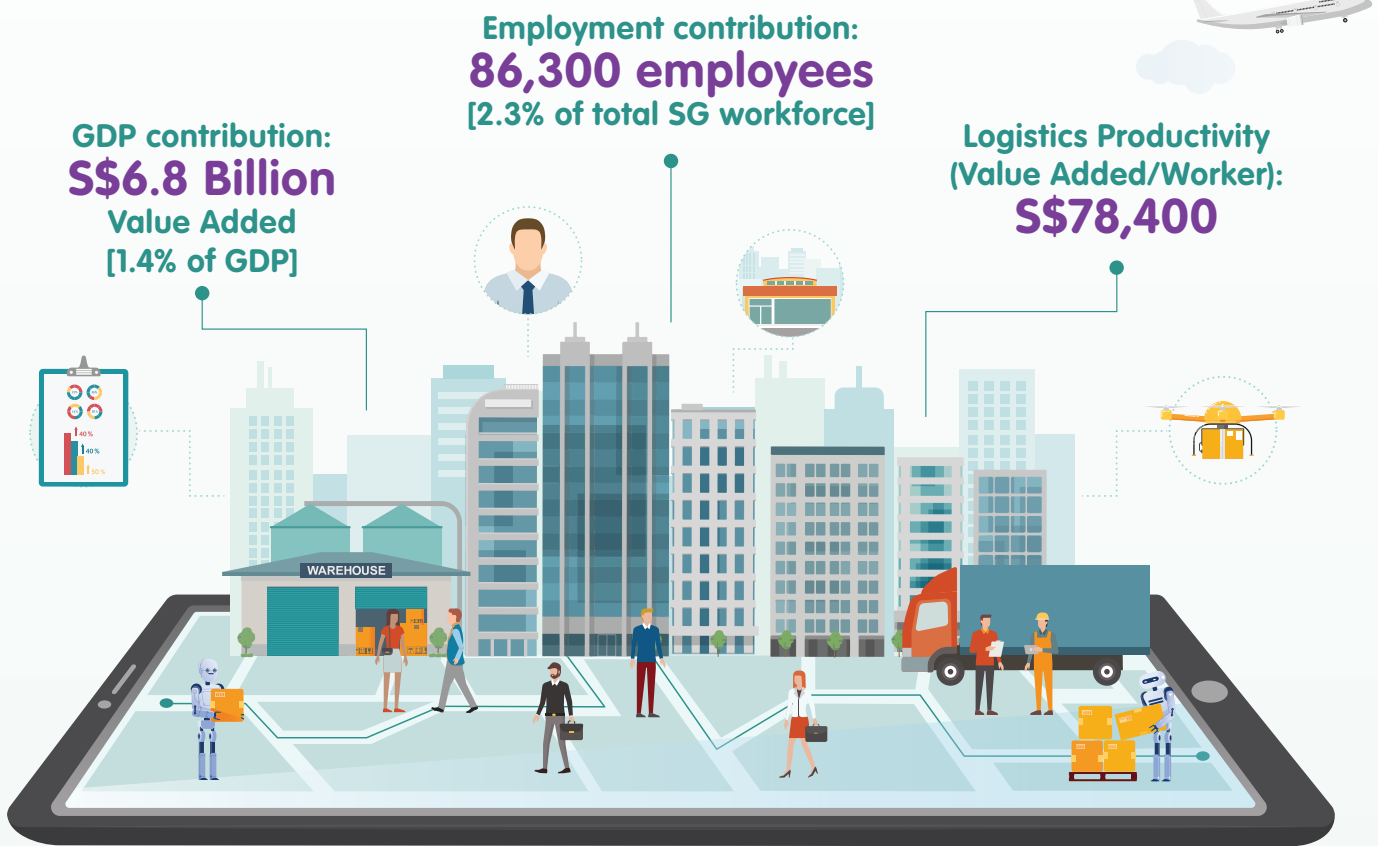
SECTOR COVERAGE - Logistics & Air Transportation

Contract Logistics

Freight Forwarding

Land Transportation

Air Transportation

Source: DOS, MOM

02 Digitalisation To Build Business Competitiveness

Enhancing Business Capabilities to Grow the Business

- Investment in digital and technology solutions can help businesses to strengthen business capabilities, improve customer experience and enable greater collaboration across the logistics value chain.

- It enables businesses to be agile, resilient and manpower-lean.

- The rise of Industry 4.0 has also created opportunities for businesses to adopt new digital capabilities to grow their business.

Creating New Jobs and Skills for Workers

- Introduction of digital and technology tools will transform business processes, and augment existing job roles.

- New job functions may emerge, requiring workers to upskill and reskill to harness the benefits of digitalisation and remain future-ready.

Industry Transformation Map (ITM)

The Logistics ITM was launched in 2016. The Logistics ITM integrates the efforts of various government agencies and associations, and maps out strategies that will reinforce Singapore's position as a globally leading logistics hub through operations excellence, innovation and a strong Singaporean core.

It outlines 4 key strategies of Productivity, Innovation, Internationalisation and Manpower skills and supply. Digitalisation plays an important role in driving productivity savings and manpower upgrading.

Click here or scan this QR code for more details on the Logistics ITM

Productivity   Innovation   Internationalisation   Manpower

Source: Logistics ITM

03 SMEs Go Digital

Aligned to the ITM, the Industry Digital Plan (IDP) is part of the SMEs Go Digital Programme that helps to make going digital simple for SMEs. The IDP provides SMEs with a step-by-step guide on the digital solutions to adopt and relevant training for their employees at each stage of their growth.

INFOCOMM MEDIA DEVELOPMENT AUTHORITY | SMEs GO DIGITAL

3 STEPS TO GO DIGITAL

For more information
Scan the QR code or visit
www.imda.gov.sg/SMEsGoDigital

Support available

- Chief Technology Officer-as-a-Service (CTO-as-a-Service)
- Industry Digital Plans
- Pre-Approved Solutions
- Start Digital
- Grow Digital
- Advanced Digital Solutions
- Government Grants e.g. Productivity Solutions Grant (PSG)

1 Is your business digital-ready?
Find out using the Industry Digital Plan (IDP) for your sector.

2 How do you get started?
Take up pre-approved solutions with grant support.

3 Where can you get help?
Access the CTO-as-a-Service for support.

SMEs Go Digital comprises the following:

CTO-as-a-Service
Assess your digital readiness, explore digital solutions and request for digital advisory and project management services.

INDUSTRY DIGITAL PLANS (IDP)
Step by step guide on digital solutions and training required at each stage of your business growth.

PRE-APPROVED SOLUTIONS
Proven off-the-shelf digital solutions pre-approved by IMDA to meet your business needs. Government grants, e.g. Productivity solutions Grant (PSG), are available for the adoption of these solutions.

START DIGITAL
Foundational digital solutions for new SMEs to get a head start in going digital.

GROW DIGITAL
Leverage Business-to-Business (B2B) and Business-to-Consumer (B2C) e-commerce platforms to go international, without a physical presence overseas.

ADVANCED DIGITAL SOLUTIONS
Advanced and integrated digital solutions to help you strengthen business continuity and build longer term resilience.

Digital Roadmap For Logistics Sector

04

This Digital Roadmap serves as a guide for your company as you embark on your digital journey.

STAGE 01	STAGE 02	STAGE 03
GETTING READY FOR THE DIGITAL ECONOMY	**GROWING IN THE DIGITAL ECONOMY**	**LEAPING AHEAD**
STREAMLINED OPERATIONS ENHANCED CAPABILITIES	DATA-DRIVEN OPTIMISATION DIGITAL COLLABORATIONS	AUTOMATED OPERATIONS INTELLIGENT BUSINESS

STAGE 01 — GETTING READY FOR THE DIGITAL ECONOMY

- B2B e-Payment
- Digital Trade Permit Platform
- Fleet Safety Management
- Freight Management
- Inventory Management
- Transport Management
- Warehouse Management

STAGE 02 — GROWING IN THE DIGITAL ECONOMY

- Active Cold Chain Management
- B2B Trade Facilitation Platforms
- Efficient Energy Management
- e-Marketplace
- Supply Chain Analytics
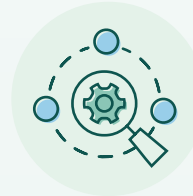
STAGE 03 — LEAPING AHEAD
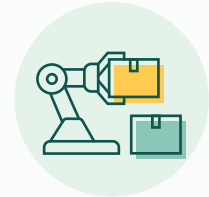
- Automated Logistics Operations
- Augmented Reality (AR) / Virtual Reality (VR) for Training and Operations
- Distributed Ledger Technology (DLT) in Transportation
- Logistics Robots (e.g. Automated Guided Vehicles)
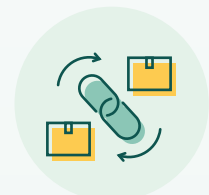
BUSINESS CAPABILITIES

Human Resource Roadmanagement, Customer Relationship Management, Sales Management, Accounting Management, Cybersecurity, Robotic Process Automation

Note: This roadmap will be updated over time as digitalisation of the industry progresses and new technologies are introduced to the industry.

Solution Description
GETTING READY FOR THE DIGITAL ECONOMY
STREAMLINED OPERATIONS, ENHANCED CAPABILITIES

Streamline and integrate your business processes to enhance productivity

DIGITAL SOLUTION	SOLUTION DESCRIPTION	BENEFITS
B2B e-Payment	Enable electronic payment amongst business partners.	• Obtain prompt updates on your business' financial transactions • Achieve faster settlement between business partners for better cash flow management • Reduce time and human resources needed to process cash and cheque transactions
Digital Trade Permit Platform	Connect the trade and logistics communities for trade-related applications. This platform functions as a document hub for digitalisation, that enables the reuse of data to cut costs and streamline processes.	• Improve operational efficiency within the supply chain • Minimise errors and achieve better compliance
Fleet Safety Management	Collect data automatically and provide insights on driving patterns and external environment through sensors and video recordings. The solution may be integrated with the Transport Management System.	• Improve road safety and cost savings through reduced insurance premiums • Reduce post-accident investigation processing time • Use data insights to reinforce positive driving behaviour
Freight Management	Digitalise information flow in freight forwarding operations that can encompass import and export shipments over air, sea and land.	• Enable information accuracy and time savings with efficient system-to-system communication by allowing companies to electronically extract, exchange and re-use data for trade declarations • Consolidate and optimise shipments for cost-effectiveness

Solution Description
GETTING READY FOR THE DIGITAL ECONOMY
STREAMLINED OPERATIONS, ENHANCED CAPABILITIES

Streamline and integrate your business processes to enhance productivity

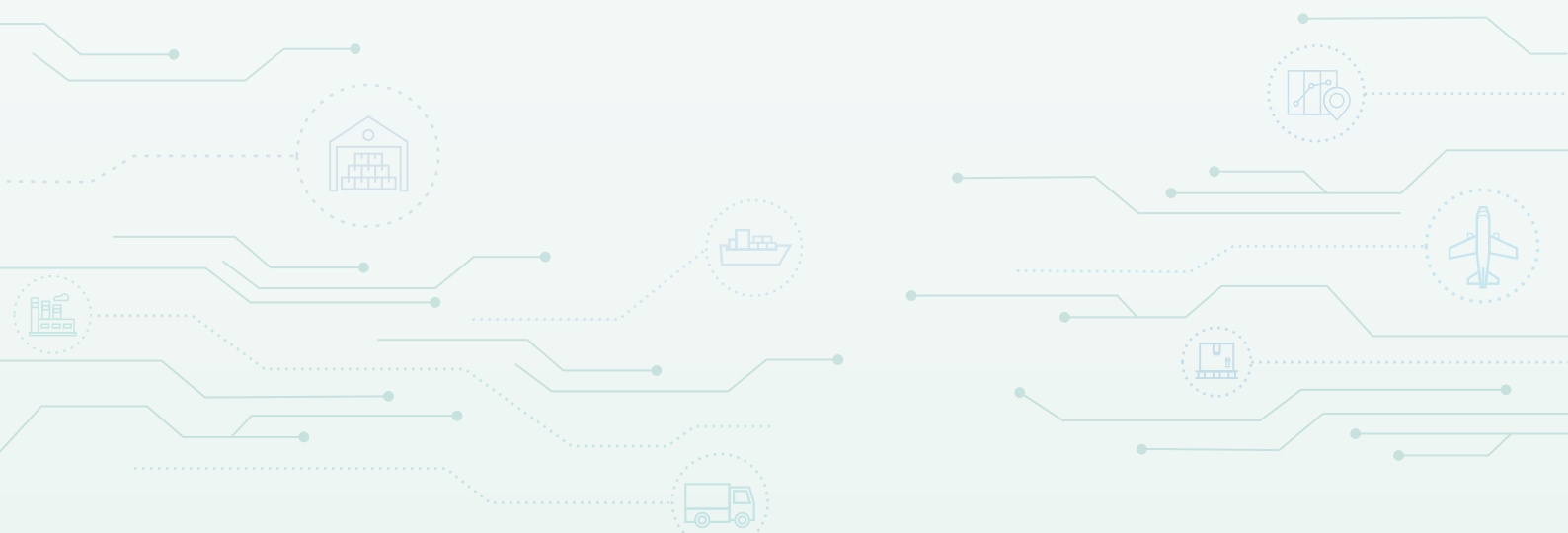| DIGITAL SOLUTION	SOLUTION DESCRIPTION	BENEFITS
Inventory Management	Control and administer the movement of inventory, with real time data. Inventory Management helps to track and monitor the location of assets using technologies like radio frequency identification (RFID) technology. It includes features such as stock take, stock issuance, stock retrieval and stock search.	• Increase visibility of inventory and assets • Enable quicker decision making on inventory management • Lower risk of theft and loss of items
Transport Management	Enable real-time visibility of the whereabouts of vehicles. Solution consists of route planning and optimisation, job assignment and tracking systems.	• Real-time monitoring of vehicle fleet's location and utilisation • Optimise asset utilisation through effective planning and deployment of vehicle fleet • Track deliveries in real time and digitise manual proof of delivery receipt
Warehouse Management	Control and track the transfer and storage of materials in a warehouse. The system supports processes needed in the shipping and receiving of goods. It is often integrated with a Transport Management System or an Inventory Management System to ensure data transparency throughout the organisation.	• Increase efficiency, consistency and oversight of warehouse operations • Enhance security through audit trails that identify workers involved in different job processes, thereby improving accountability

Solution Description
GROWING IN THE DIGITAL ECONOMY
DATA-DRIVEN OPTIMISATION, DIGITAL COLLABORATIONS

Connect digitally and enable data-driven optimisation to maximise business value

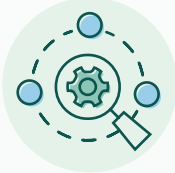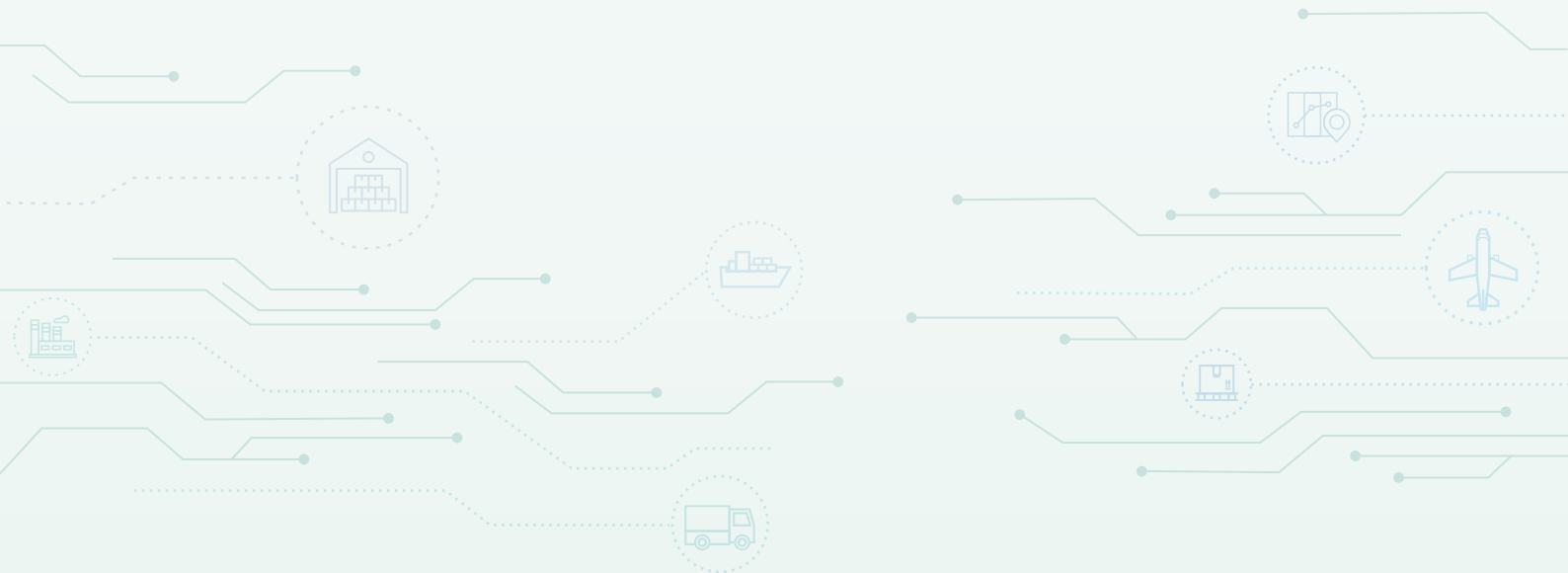| DIGITAL SOLUTION	SOLUTION DESCRIPTION	BENEFITS
Active Cold Chain Management	Use digital sensors that enable the monitoring and transmission of environmental information in a warehouse. For instance, humidity, temperature and location of goods that are being stored and transported.	• Enable companies to expand services to cover temperature sensitive cargo, such as perishable goods • Monitor and alert operators when environmental condition affects cargo integrity
B2B Trade Facilitation Platform	Facilitate electronic data transfer with international trade parties and respective government regulatory agencies involved in cross-border import and export of shipments and declarations.	• Increase efficiency through enhanced trade processes and data flow • Reduce human data entry errors • Reduce rework and penalties arising from inconsistent declarations to customs authorities in both importing and exporting countries
Efficient Energy Management	Deploy digital sensors and monitoring systems to optimise energy usage. Efficient Energy Management solution may consist of predictive smart lighting control and energy consumption monitoring.	• Reduce energy wastage and improve operating efficiency • Increase visibility of energy consumption across facilities • Reduce utility costs

Solution Description
GROWING IN THE DIGITAL ECONOMY
DATA-DRIVEN OPTIMISATION, DIGITAL COLLABORATIONS

Connect digitally and enable data-driven optimisation to maximise business value

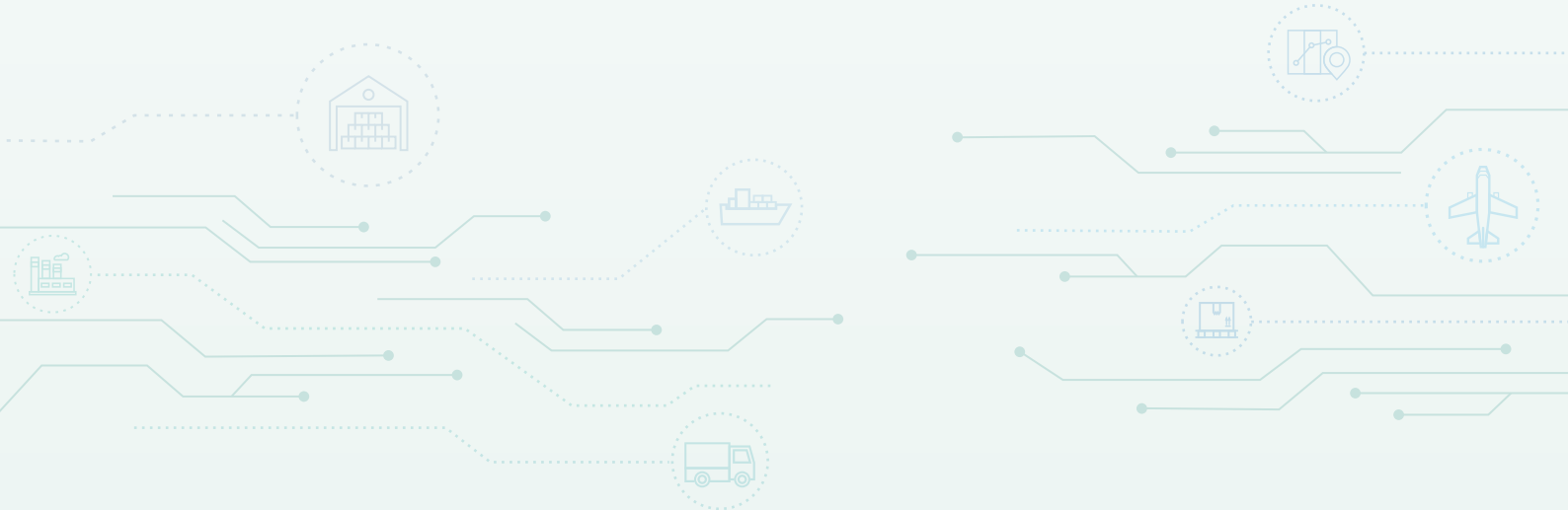| DIGITAL SOLUTION	SOLUTION DESCRIPTION	BENEFITS
e-Marketplace	Match logistics demand with supply through digital brokerage platforms. e-Marketplaces allow users to compare quotes and procure directly from service providers listed on the marketplace.	• Access a broader customer and supplier base • Increase price transparency • Better match supply to demand, enabling optimisation of capacity and truck trips
Supply Chain Analytics	Use data analytics to gain deeper insights on business operations and improve operational efficiency. Solutions may include supplier performance analysis and supplier risk profile analysis to enable companies to make better supply chain decisions.	• Reduce stock outages and minimise fulfilment lead times • Improve resource utilisation through timely and informed planning decisions • Better informed stock management decisions

Solution Description
LEAPING AHEAD
AUTOMATED OPERATIONS, INTELLIGENT BUSINESS

Automate and use advanced technologies to support smart and manpower-lean operations

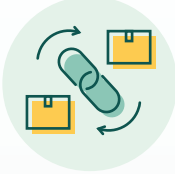| DIGITAL SOLUTION	SOLUTION DESCRIPTION	BENEFITS
Automated Logistics Operations	Automated technologies that increase productivity in logistics facilities such as warehouses and container depots. Includes space optimisation technologies such as Vertical Storage Systems, Lean Lifts, and Automated Storage and Retrieval Systems as well as autonomous technologies like Robotic Arms, Smart Cranes, Automated Sorters, Automated Vanning/Devanning systems.	• Optimise warehouse layout and space utilisation • Enable manpower-lean operations • Improve pick-and-pack accuracy and responsiveness • Improve customer service experience
Augmented Reality (AR) / Virtual Reality (VR) for Training and Operations	Train employees in logistics operations using AR/VR. Solution may offer real-time object recognition, barcode reading, indoor navigation, and seamless integration of information with other systems. It provides visualisation of the entire operation process, and modifications can be overlaid in the real environment to field test and adjust planned redesign measures.	• Train and practise in a virtual environment that mirrors an actual operating facility • Increase productivity, reliability and accuracy in handling of logistics tasks • Provide hands-free intuitive digital support for workers during picking operations • Support and reduce the cost of warehouse redesign and planning

Solution Description
LEAPING AHEAD
AUTOMATED OPERATIONS, INTELLIGENT BUSINESS

Automate and use advanced technologies to support smart and manpower-lean operations

DIGITAL SOLUTION	SOLUTION DESCRIPTION	BENEFITS
Distributed Ledger Technology (DLT) in Transportation	Secure data exchange between transportation companies and shippers using DLT, such as blockchain. Useful for sectors with stringent compliance requirements such as hazardous material, food and beverage, and cold chain transportation.	• Improve traceability and transparency of goods movement across the supply chain • Establish trust in the data exchange as the immutable nature of DLT in the supply chain prevents tampering • Improve ease of information and data sharing among supply chain partners, due to interoperability of the data on DLT platform
Logistics Robots	Use computer-guided vehicles for the movement of goods. This can include Autonomous Mobile Robots, Automated Guided Vehicles, Drones & Automated Vertical Narrow Aisles.	• Automate the process of goods movement, freeing up workers to perform high value added work • Reduce instances of errors, accidents due to fatigue or error • Allow ad-hoc scheduling of movement of goods without the need for "holding areas"
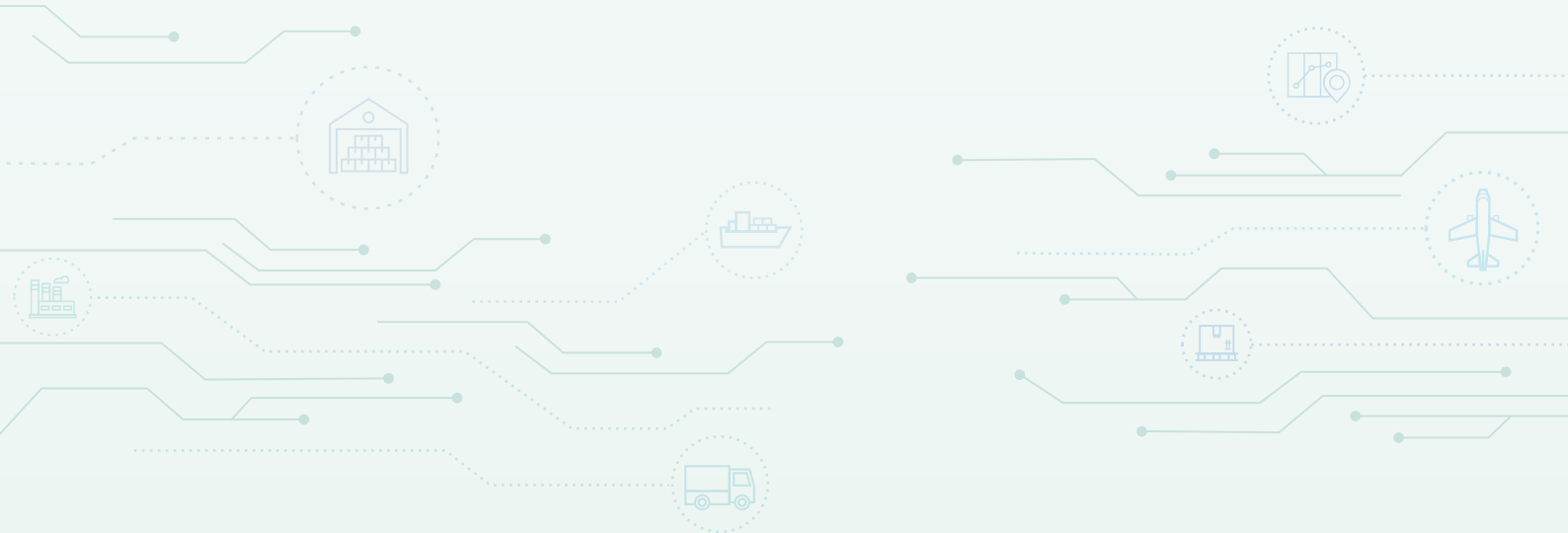
05 Digital Skills Needed

Logistics job roles will evolve to meet the changing needs of customers and support the growth of companies. Upskilling of workers is key to enable companies to harness the potential of digital technologies, and remain competitive and relevant.

ALL USERS	ADVANCED USERS
Require broad-based digital literacy and awareness	Require higher proficiency digital skills

"TECH BASICS" SKILLS

Broad-based innovation mindset and digital literacy / awareness

Examples of courses:
SSG SkillsFuture Series

Solution-specific user level digital skills
Solution-specific training provided by vendor

Examples of job roles

Warehouse Operator

Inventory Management Manager

Dispatch Operator/ Container Driver

Transport Officer

Freight Inspector/ Supervisor

Import/ Export Manager

Order Fulfilment Assistant

Customer Service Manager

Project Cargo Sales Manager

"TECH ADVANCED" SKILLS

Higher proficiency level digital skills

Examples of courses:
Training mapped to the Skills Framework for 'Logistics' and 'ICT'
SSG SkillsFuture Series (Intermediate and Advanced) and Programmes by NUS-TLIAP (The Logistics Institute Asia Pacific)

Examples of job roles

Logistics Solutions Analyst/Manager/ Engineer

Logistics Data Specialist

Logistics System Analyst

Operations Integration Specialist

Digital Services Project Specialist/IT Business Solutions Project Specialist

Digital Skills Needed: Digital Training Roadmap

This training roadmap serves as a guide to prepare companies' workforce to adopt digital solutions at each of the 3 stages of growth.

	STAGE 01	STAGE 02	STAGE 03
	GETTING READY FOR THE DIGITAL ECONOMY	**GROWING IN THE DIGITAL ECONOMY**	**LEAPING AHEAD**
"TECH BASICS" All employees in the industry	• Experience how Robotic Process Automation (RPA) Makes Your Work Easier • Industry 4.0 in Action • Basic Demand Forecasting Techniques • Inventory Replenishment and Ordering Decision	• Warehousing Technologies and Management • Lean and Smart Manufacturing and Logistics	• Advanced Demand Forecasting Techniques
	Vendor Solution-Specific Training		
"TECH ADVANCED" Employees that use or are exploring advanced tech in their work / organisation	• Digitalisation Journey Mapping in Logistics • Supply Chain (Process) Mapping and Visualisation • Learning by (Serious) Gaming • Basics of e-Commerce Logistics • Procurement and Supplier Management	• Introduction to Quantitative Techniques and Modelling • Supply Chain Analytics and Performance Dashboarding • Design Thinking and Solutioning • ICT and Supply Chain Management • TCP-SP7: TIBCO Spotfire for Analysts Certification Exam	• Supply Chain Thinking and Digital Practice • Practical Foundations in Quantum Computing (Building Readiness) • Basic Supply Chain Risk Management and Scenario Analysis • Applied AI and Machine Learning in Logistics and Supply Chain Management • Bridging Technology and Operations - Case studies in Logistics and Supply Chain Management • (Virtual) Tours to Start-ups and Innovation Centres to See ICT Readiness and Future Tech • Certified Blockchain Professional (CBP) • Blockchain for Business • Robotic Process Automation for Business • Kickstarting Your Machine Learning Journey

Training programmes aligned to **Skills Framework** and emerging areas under **SkillsFuture Series**

For more information on training course, visit:
www.rp.edu.sg/ace | www.tliap.nus.edu.sg | www.imda.gov.sg/imtalent/training-and-courses/

Centre Of Innovation For Supply Chain Management

SUPPLY CHAIN MANAGEMENT
CENTRE OF INNOVATION
REPUBLIC POLYTECHNIC

06

The Centre of Innovation for Supply Chain Management (COI-SCM) helps companies to build capabilities and adopt innovation across supply chain functions.

LEAN & Process Re-engineering

Enterprise Resource Planning

Inventory Management & Planning

Automation & Engineering

Transport Optimisation

Warehouse Design & Planning

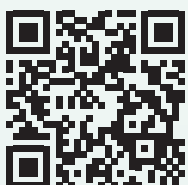**01** Supply Chain Consultancy & Capability Building Programme

02 Applied Research & Technology Development

03 Industry Outreach & Innovation Showcase

For more information, visit:
https://www.rp.edu.sg/coi-scm

Get Started Today

You will be supported at every stage of your digital journey, through three simple steps:

1 | Is your business digital-ready?

IDP

Logistic IDP

- Find out if you are digital-ready by using the IDP resources here or scan the QR code.

2 | How do you get started?

APPLY

- Tap on CTO-as-a-Service to complete your Digital Readiness Self-Check in the web app and select from the recommended digital solutions that best meet your business needs.

- Visit GoBusiness Gov Assist for the contact information of solution providers. If funding support is required, apply for the Productivity Solutions Grant (PSG) on the Business Grants portal, before purchasing and implementing digital solutions.

- You can also apply for training subsidies under the SkillsFuture Enterprise Credit (SFEC).

3 | Where can you get help?

CTOaaS

- Tap on CTO-as-a-Service for digital consultancy and project management services.
- Visit SME Centre if you require business advisory.
- Contact the Centre of Innovation for Supply Chain Management (COI-SCM) at Republic Polytechnic for help to develop and strengthen your supply chain and logistics capabilities through process innovation, technology enablement and training.

08 Additional Information

FOR SMALL AND MEDIUM ENTERPRISES

Digital Consultancy and Solutions

CTO-as-a-Service
go.gov.sg/CTOaaS

SMEs Go Digital
https://imda.gov.sg/SMEsGoDigital

GoBusiness Gov Assist
https://www.gobusiness.gov.sg/productivity-solutions-grant/

Be Safe Online
https://www.csa.gov.sg/~/media/csa/documents /publications/be_safe_online/be_safe_online_ handbook.pdf

Business Advisory

SME Centres managed by Trade Associations:

• SME Centre@ASME
• SME Centre@SCCCI
• SME Centre@SICCI
• SME Centre@SMCCI
• SME Centre@SMF

https://www.enterprisesg.gov.sg/smecentre

Enterprise Infoline: +65 6898 1800

FOR INDIVIDUALS

Capability Upgrading and Career Facilitation

SkillsFuture Credit
https://www.skillsfuture.gov.sg/credit

SkillsFuture for Digital Workplace
https://www.skillsfuture.gov.sg/digitalworkplace

Skills Framework
https://www.skillsfuture.gov.sg/skills-framework

TechSkills Accelerator (TeSA)
https://www.go.gov.sg/TeSA

WSG's Careers Connect
https://www.wsg.gov.sg/career-services.html

WSG's Professional Conversion Programme
https://www.wsg.gov.sg/programmes-and-initiatives/professional-conversion-programmes-individuals.html

e2i Meet a Career Coach
https://e2i.com.sg/app

FOR ICM VENDORS

SMEs Go Digital
https://imda.gov.sg/icmvendors

This Digital Roadmap is part of the SMEs Go Digital programme.

For programme information and feedback, visit: https://imda.gov.sg/SMEsGoDigital

#SGDIGITAL

Singapore Digital (SG:D) is a nation-wide movement to unify Singapore's digitalisation efforts. Whether it is help for different industries to start their digitalisation journeys, or creating new ecosystems, opportunities and capabilities for the future, SG:D is set to take us ahead as a leading digital global node. The :D smiley face icon in the logo signifies the optimism of Singaporeans advancing together with digital innovation. As we progress into the digital economy, it is all about the people – the heart of all we do.

🌐 **imda.gov.sg/sgdigital**

🐦 **twitter.com/IMDAsg**

📷 **instagram.com/IMDAsg**

f **facebook.com/IMDAsg**
facebook.com/enterprisesg

▶ **youtube.com/IMDAsg**
youtube.com/enterprisesingapore

in **linkedin.com/company/IMDAsg**
linkedin.com/company/enterprisesg

Enterprise Singapore

INFOCOMM MEDIA DEVELOPMENT AUTHORITY