

Impact Study of AI, Digital, and Green Economy on the Malaysian Workforce

Volume 1

Monday | 18 November 2024

Malaysia International Trade & Exhibition Centre (MITEC)

Background

- TalentCorp mandated as KESUMA's Strategic Think Tank to lead studies on AI, Digital, and Green Economy impacts on Malaysia's workforce.

Purpose of Study

- Assess how emerging AI, Digital, and Green Economy trends shape Malaysia's workforce needs.
- Aligned with MADANI Economy goals and national blueprints like NIMP 2030, MyDIGITAL, RMKe-12 and many more.

Objective

Understand the impact of AI, Digital and Green Economy on the Malaysian workforce, and identify the skills, training programmes and pivoting strategies required to address the impact.

Key Deliverables

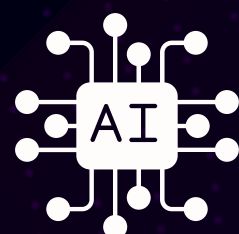
1. Coverage

- Impact of AI, digital and green economy to industries, roles and skills
- Pivoting strategies for impacted roles
- Mapping of training programmes to skills
- Key actions to address impact to workforce

2. Update MyNSR with Roles & Skills from the Impact Study Report

- Central platform with information on occupation and skills
- Aligned to internationally benchmarked and accepted standards
- Assist in policy coordination and human capital planning

Focus Areas



AI Readiness

AI Talent Roadmap 2024–2030 launched; Malaysia ranks 8th in APAC for AI readiness, 2nd in ASEAN.



Digital Competitiveness

Digital economy contributes 22.6% of GDP; Malaysia Digital initiative launched to improve competitiveness.



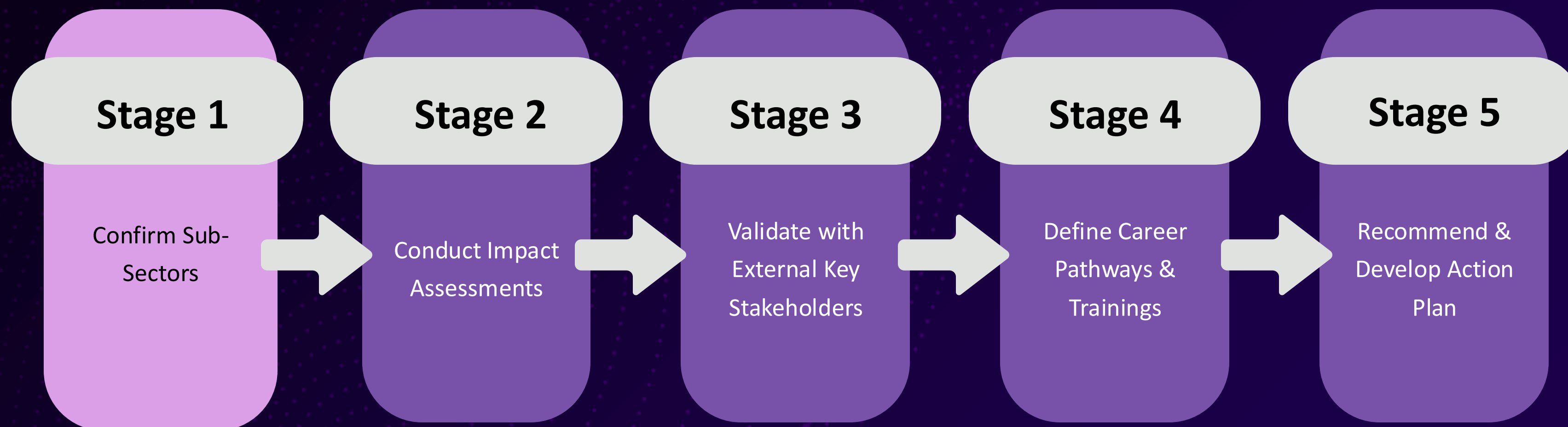
Digital Green Economy Transition Competitiveness

RMKe-12 and National Energy Transition Roadmap (NETR) set net-zero GHG goals by 2050; ranks 1st in ASEAN for energy transition.

Future Workforce Direction

Government focuses on **upskilling and reskilling** to equip Malaysian workforce with essential AI, Digital, and Green Economy competencies.

Approach & Methodology



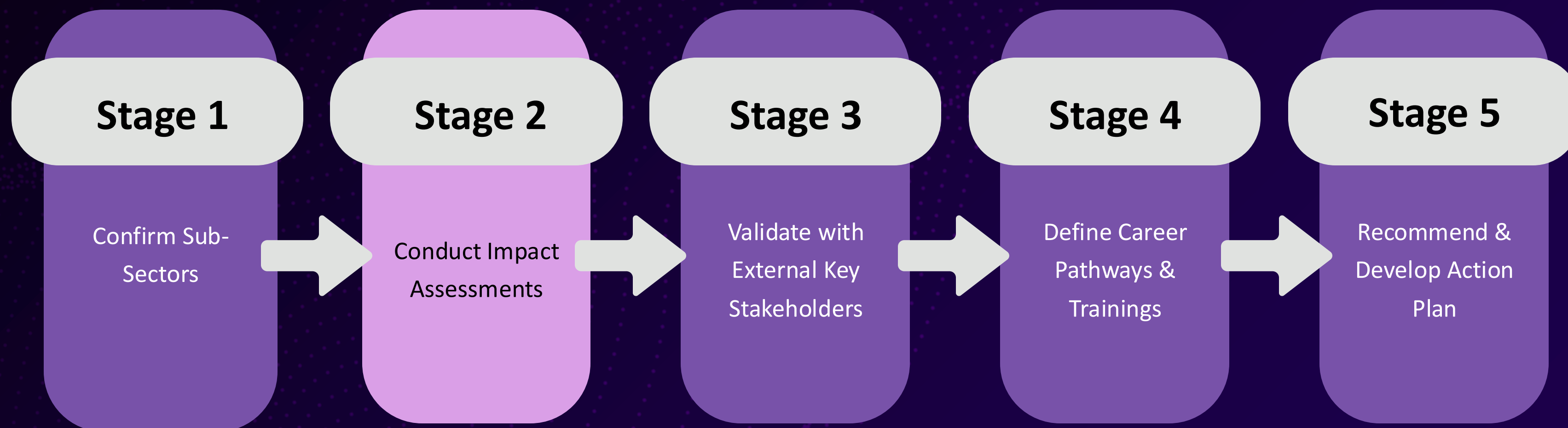
Stage 1 - Confirming Sub-Sectors

- Consolidating the listing of roles and skills in each sector.
- Validating and selecting sub-sectors/tracks for the sector.
- Identifying the skills taxonomy for each role within each sector.
- Benchmarking the roles and skills against multiple existing frameworks, such as the Malaysia Standard Classification of Occupations (MASCO), Occupational Framework (OF), the Industrial Skills Framework (IndSF) by HRD Corp, and other international frameworks such as the Singapore Skills Framework, to identify any gaps and areas of improvement.





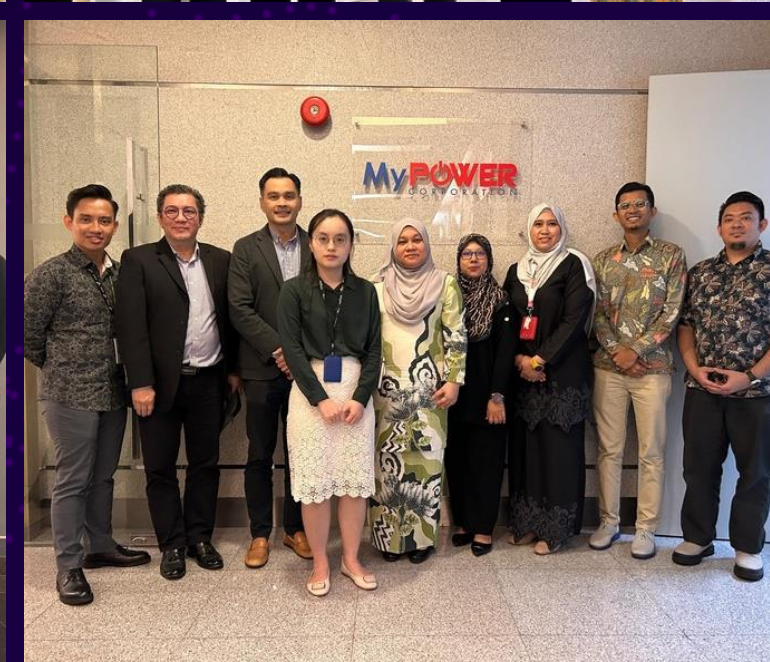
Approach & Methodology



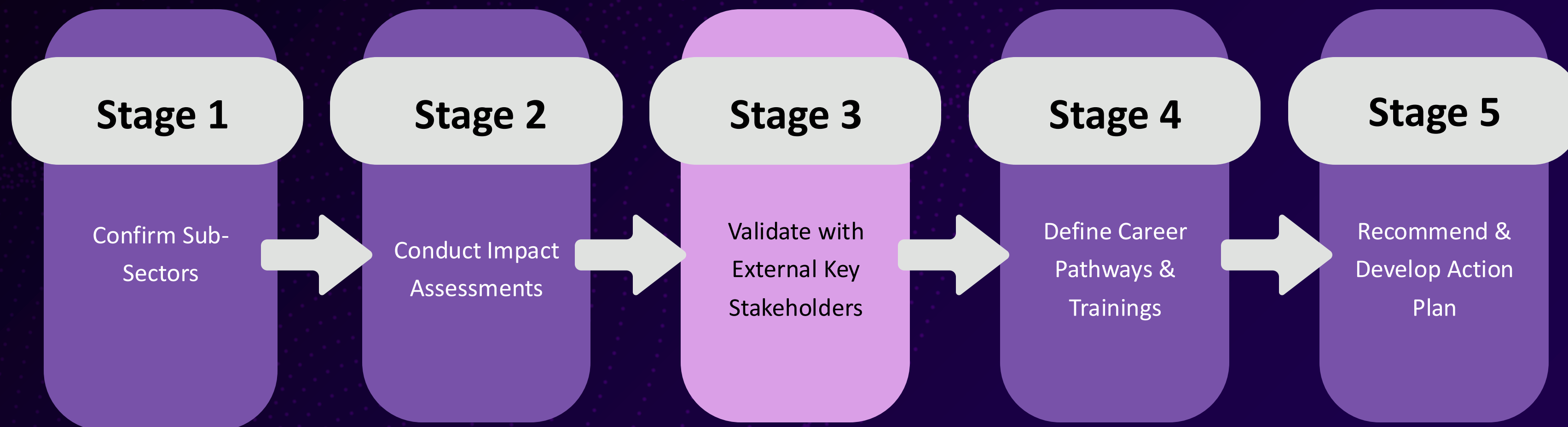
Stage 2 - Conduct Impact Assessment on Roles

- Conducting impact assessment of AI, digital, and green economy.
- Syndicating preliminary findings (roles, skills, and impact assessments) with Subject Matter Resources (SMRs).
- Consolidating findings from engagements with SMRs.
- Preparing and scheduling validation workshops with External Stakeholders.



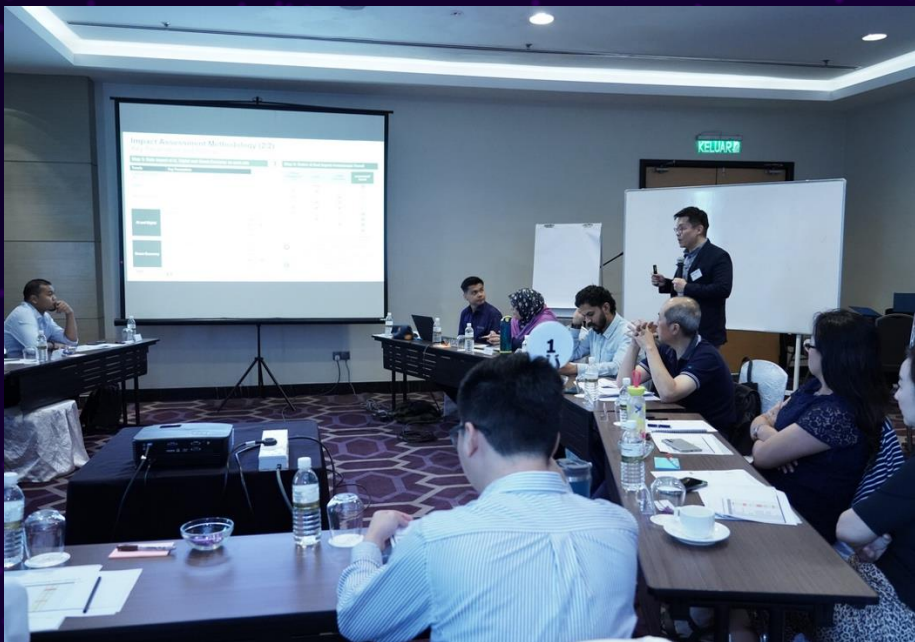


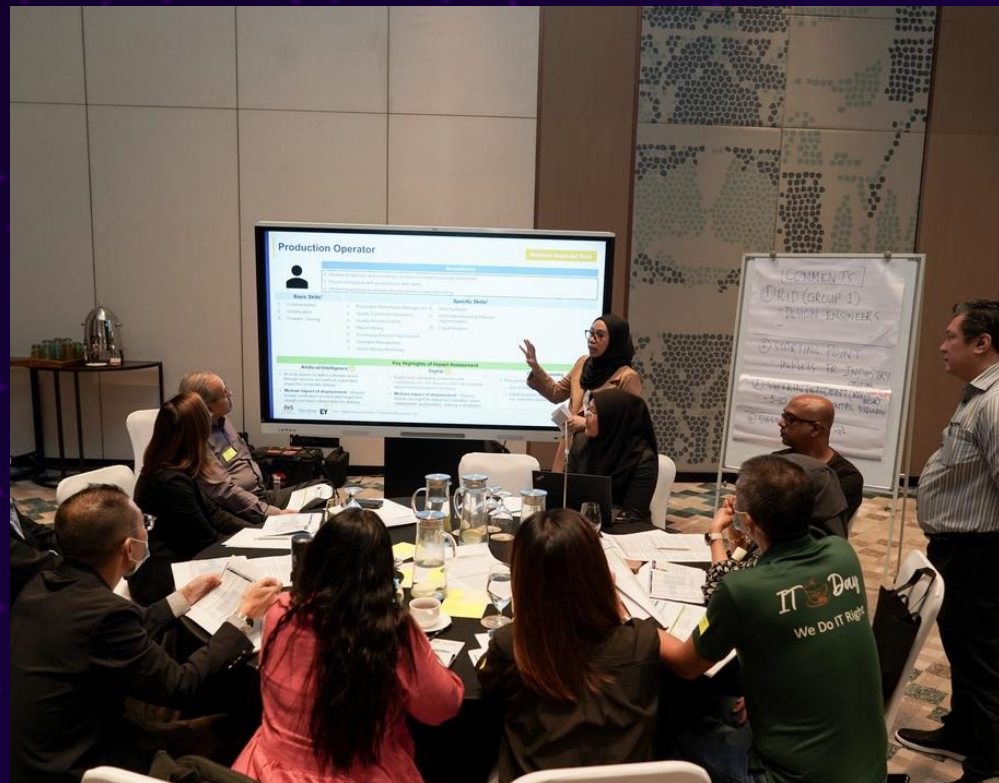
Approach & Methodology



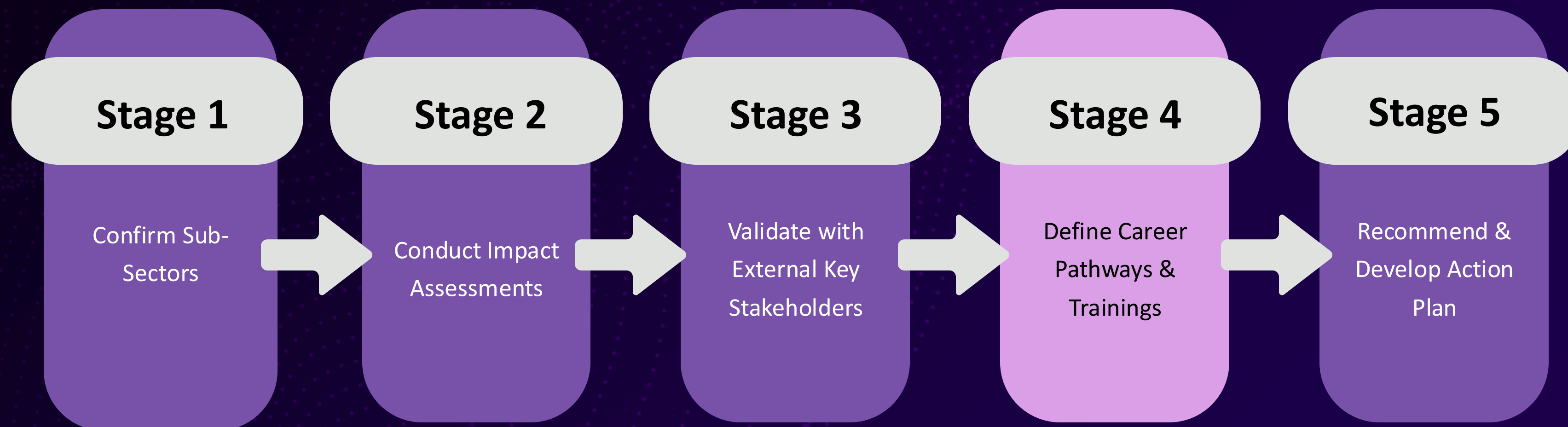
Stage 3 - Validate with External Key Stakeholders

- Validating the localised consolidated list of roles & skills, and impact assessment with external stakeholders.
- Obtaining views on possible career pathways within and across sectors.
- Consolidating findings from engagements with external stakeholders.
- Working alongside the MyMahir FSTC council members to further validate the findings.





Approach & Methodology



Stage 4 - Define Career Pathways and Trainings

- Finalising the future roles, skills, career pathways, and trainings based on inputs obtained.
- Mapping the list of trainings obtained from HRDC, SSDCs, and other training providers for upskilling and reskilling opportunities.
- Summarising the capacity projection (i.e. demand of future roles) based on inputs obtained.



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GROUP OF COMPANIES



A P U
ASIA PACIFIC UNIVERSITY
OF TECHNOLOGY & INNOVATION



Kedah Industrial Skills and
Management Development
Centre (KISMEC)



University College TATI (UC
TATI)



Sabah Skills and Technology
Centre (SSTC)



SHRDC

Selangor Human Resource
Development Centre (SHRDC)

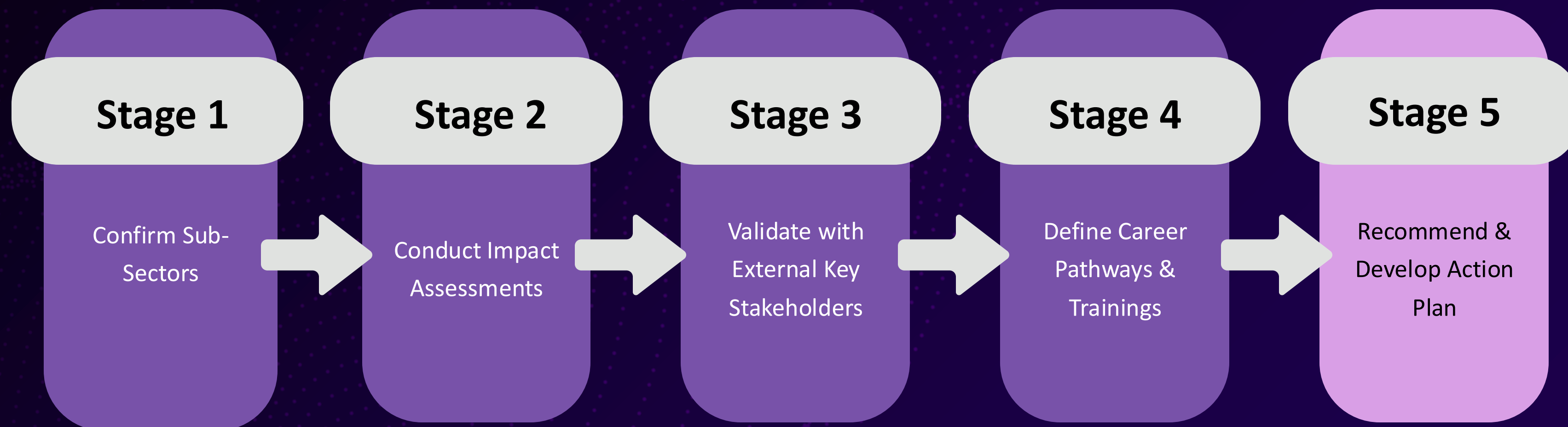


Penang Skills Development
Centre (PSDC)

Jskills | **Johor Skills**
Development Centre



Approach & Methodology



Stage 5 - Recommend and Develop Action Plans

- Developing action plans covering 4 key stakeholder groups:
 - Government
 - Industry Players
 - Academia
 - Training Providers



Government



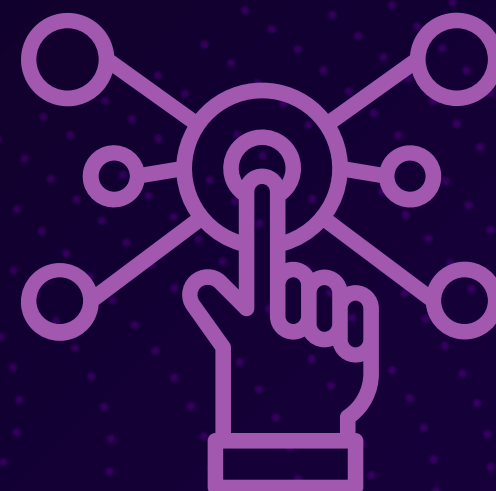
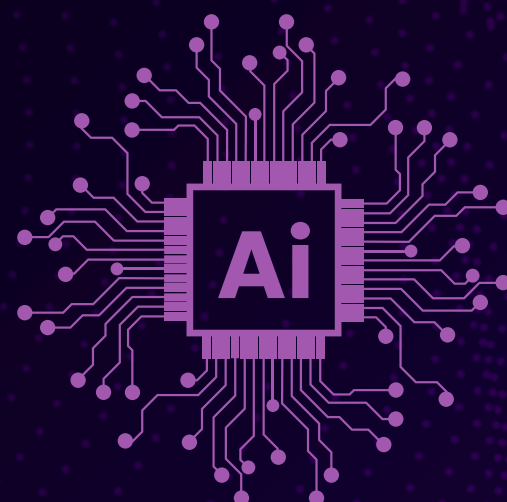
Industry



Academia



**Training
Providers**



Global vs Malaysia Overview

AI & Digital Overview: Global vs Malaysia

Global

AI drives transformation; 85% of companies prioritize adoption.

(World Economic Forum, Future of Jobs Report 2023).

Malaysia

13% AI-ready; challenges in infrastructure, governance, talent, and investment slow progress.

(Cisco AI Readiness Index 2023).

Key Insight

Malaysia is advancing in AI adoption but must overcome readiness gaps, governance issues, and talent shortages to fully harness its potential.

Green Economy Overview: Global vs Malaysia

Global

- Governments worldwide launched substantial initiatives and stimulus packages.
- Opportunities for embedding sustainable practices across diverse sectors.
- Strong commitment to reducing GHG emissions and mitigating climate change.

Malaysia

- ASEAN, including Malaysia, is focused on climate mitigation and sustainability.
- Revised Nationally Determined Contributions (NDC) to target a 45% reduction in carbon intensity by 2030. *(Malaysia's UNDP Climate Promise)*

Barrier to Green Adoption

High costs and limited incentives hinder green technology adoption.

Key Findings

1

All sectors agree that adopting AI, digital technology, and green economy trends is essential for staying competitive and sustainable.

2

949 job roles were identified, and a skills framework for both basic and specific (technical) skills was reviewed and confirmed with stakeholders.

3

~620k jobs, or ~18% of the 3.5 million employees expected to be highly impacted in the next 3-5 years.

4

Highly impacted job roles can pivot to other jobs within or across sectors.

5

60 emerging jobs will become more important, with 70% in AI and digital, 20% in green, and 10% in new technologies.

6

Employers are increasingly seeking talents with proficiency in AI, digital, & green skills, even for non-tech roles.

Adoption level of AI, Digital, & Green Economy



Sector	AI	Digital	Green Economy
Aerospace	High	High	High
Global Business Services (GBS)	High	High	Medium
Information & Communications Technology (ICT)	High	High	Medium
Chemical	Medium	High	High
Energy & Power (E&P)	Medium	High	High
Electrical & Electronics (E&E)	Medium	High	Medium
Medical Devices	Medium	High	Medium
Pharmaceutical Manufacturing	Medium	High	Medium
Wholesale & Retail Trade	Low	Medium	Medium
Food Manufacturing & Services	Low	Medium	Medium

Adoption Level

KEY FINDING 1

Aerospace, Global Business Services, and ICT

higher degrees of AI adoption

Aerospace, Chemical, and Energy and Power

advancing green economy adoption

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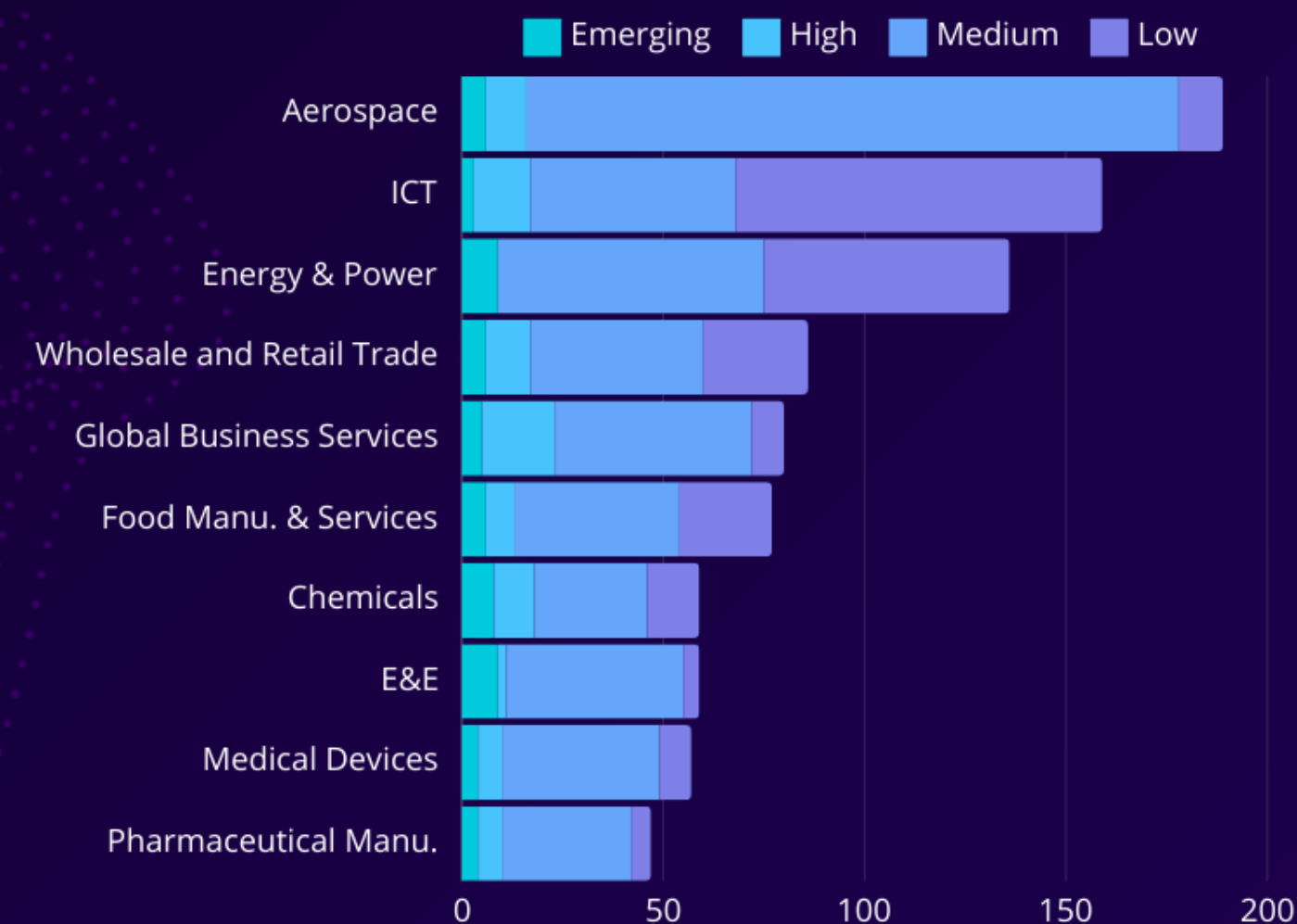
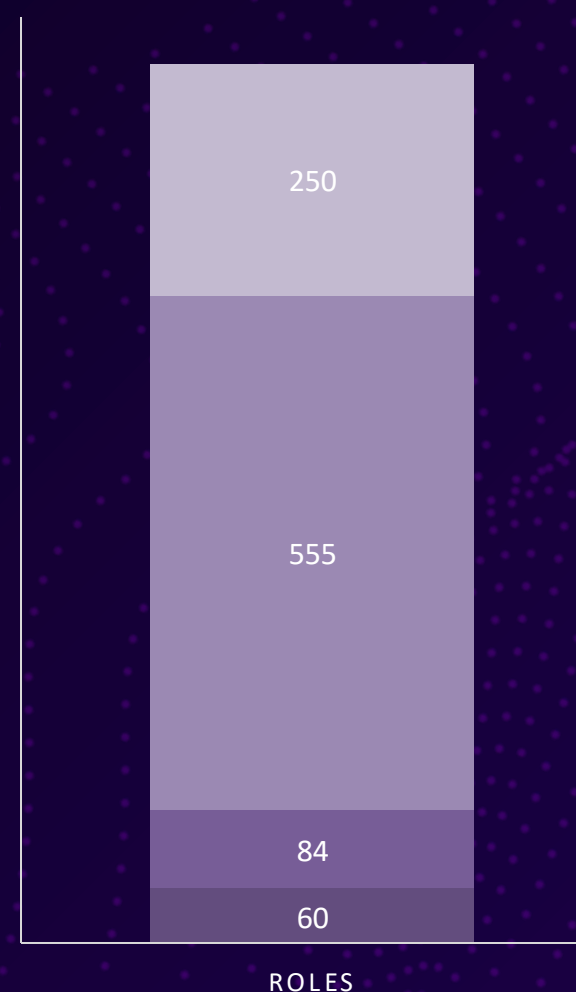
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Employers are increasingly seeking talents with proficiency in AI, digital, & green skills, even for non-tech roles.

A total of 949
roles were
validated across
the 10 sectors

KEY FINDING 2

■ Emerging ■ High-Impacted
■ Medium-Impacted ■ Low-Impacted



A total of 949 roles were validated across the 10 sectors

KEY FINDING 2

- GBS has the most Highly Impacted Roles (HIR) (18 roles), due the nature of the business that is repetitive and transactional in nature.
- E&E, Medical Devices and Pharmaceutical Manufacturing have few HIRs (<6), as these sectors are advanced manufacturing.
- Although E&P has no HIRs due to its heavily regulated nature which requires human oversight in core operations, the sector has amongst the higher emerging roles.
- AI and Digital technologies that enhance productivity such as data analytics in Medical Devices or enabling remote Operations Control Centre in E&E are changing how work is performed.
- Green Economy is driving the emergence of new roles such as Sustainability Engineers or Bio-process Engineers.

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Highly-Impacted Roles (HIR) Common Characteristics

KEY FINDING 3

Manual & Routine Task

What?

Roles involve repetitive physical labor, data entry, or simple rule-based decision-making.

Why?

These tasks are easily replicable by machines and algorithms, leading to automation and potential job displacement

Data-Driven Analysis & Decision Making

What?

Roles rely heavily on analysing and interpreting data to make informed choices

Why?

Advancements in machine learning and data analytics enable AI to process vast amounts of data and generate insights, potentially replacing human analysts in certain areas

Highly-Impacted Roles (HIR) Common Characteristics

KEY FINDING 3

Entry Level Jobs

What?

Roles require minimal training or specialised knowledge to perform the job adequately.

Why?

AI and automation can be readily trained or programmed to execute these standard tasks, making them less reliant on human labor.

Predictable and Structured Environments

What?

Roles operate in well-defined settings with clear rules, procedures, and expected outcomes.

Why?

AI excels in pattern recognition and can efficiently handle tasks within such environments, potentially replacing human workers.

84 distinct roles will be highly impacted in the next 3 to 5 years



WRT Assistant / Coordinator, Marketing	WRT Assistant / Coordinator, Sales	WRT Associate/ Assistant, Warehouse	WRT Specialist, Order Fulfilment	WRT Specialist, Chat Support	WRT Cashier, Customer Care
WRT Store Assistant, Receiving	WRT Display Artist, Visual Merchandising	CHEM HSE Executive / Assistant	CHEM Process Engineer	CHEM Production Planner	CHEM Laboratory Analyst
CHEM R&D Assistant / Laboratory Technician	CHEM Weighbridge Supervisor	CHEM Weighbridge Operator	CHEM Warehouse Storekeeper / Inventory Coordinator	CHEM Forklift Operator	CHEM Occupational / Industrial Hygiene Officer
GBS Financial Analyst	GBS Accounts Payable (AP) Analyst	GBS Accounts Receivable (AR) Analyst	GBS Invoice Processing Administrator	GBS Vendor Master Data Administrator	GBS Payment Processing Analyst
GBS Order Management Analyst	GBS Billing Analyst	GBS Credit Analyst	GBS Cash Application Analyst	GBS Master Data Management Analyst	AERO Data Analyst
GBS IT Helpdesk Technician	GBS HR Information Analyst	GBS Learning and Development Specialist	GBS Payroll Specialist	GBS Logistics Coordinator	GBS Customer Service Representative (CSR)
MD Biostatisticians	MD Lab Technician	MD Engineering and Maintenance Supervisor	MD Production Executive	MD Assembler (Production Operator)	MD Quality Assurance Technician

84 distinct roles will be highly impacted in the next 3 to 5 years



ICT Incident Investigator	ICT Associate Security Analyst	ICT Security Operations Analyst	ICT Data Analyst / Associate Data Engineer	ICT Cloud Administrator	ICT Associate UI Designer
ICT Cloud Analyst	ICT Applications Support Engineer	ICT Associate Applications Support Engineer	ICT Associate Operations Centre Support Engineer	ICT Associate Systems Support Engineer	ICT OSS Analyst
ICT NOC Technician	ICT Customer Insights Analyst	FMS Process Technician / Maintenance Technician	FMS Production Operator	FMS Quality Control Technician / Asst / Laboratory Technician	FMS Laboratory Technician
FMS Transportation Assistant	FMS Crew Leader	FMS Server / Service Crew	PM Process Development / MS&T Engineer	PM Process Development / MS&T Senior Engineer	PM Lab Technician
PM Production Executive	PM Post- Production Engineer	PM Field Engineer	AERO General Worker/ Operator (Aircraft Engine)	AERO Store Assistant (Aircraft Engine)	AERO Planning Assistant/ Supervisor (Aircraft Engine)
AERO General Worker/ Operator (Aircraft Maintenance)	AERO Store Assistant (Aircraft Maintenance)	AERO Planning Asst/ Supervisor (Aircraft Maintenance)	AERO Planning Asst/ Supervisor (Fleet Mngmt)	AERO Document Controller (Manufacturing)	AERO General Worker/ Operator (Manufacturing)
AERO Store Assistant (Manufacturing)	E&E Production Operator	E&E Planning Officer	WRT Assistant / Coordinator, Operations	WRT Assistant / Coordinator, Procurement and Sourcing	WRT Specialist, Contract

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Pivoting Opportunities

KEY FINDING 4



Customer Service Representative (CSR)

Support customer inquiries, concerns, and complaints timely and accurate.

Transferable Skills

Specific Skills

Non-exhaustive

- Big Data Analytics
- Customer Experience Design
- Customer Relationship Management

Specific Skills

Non-exhaustive

- Customer Relationship Management

Specific Skills

Non-exhaustive

- Customer Relationship Management
- Big Data Analytics

Upskilling & Reskilling

through HRDC and/or SSDC programmes

Additional Skills

Specific Skills

Non-exhaustive

- Project Management

*On-the-job Coaching and
Mentoring*

Specific Skills

Non-exhaustive

- Case Evaluation & Risk Assessment
- Reporting & Documentation

*On-the-job Coaching and
Mentoring*

Specific Skills

Non-exhaustive

- Sustainable Business Practices
- Sales Strategy & Execution
- Product Performance Management

*On-the-job Coaching and
Mentoring*

Potential Jobs

Customer Service

CRM | CUSTOMER RELATIONSHIP MANAGEMENT SPECIALIST

Uses familiar with customer data and service processes to effectively manage CRM systems

Customer Service

DISPUTE RESOLUTION SPECIALIST

Applies skills in handling customer complaints and resolving issues to focus on resolving disputes and improving customer satisfaction

Wholesale & Retail Trade

SALES OPERATION ASSISTANT

Leverages the CSR's customer-focused skills and builds on sales-oriented skills and product knowledge

Pivoting Opportunities

KEY FINDING 4



Aircraft Engine (Operator)

Cleans, assists operations, transports parts, follows safety rules, and improves efficiency.

Transferable Skills

Specific Skills

Non-exhaustive

- 5s Techniques
- Environmental Awareness
- Inspection & Testing Skills
- Continuous Improvement

Basic Skills

Non-exhaustive

- Adaptability & Resiliency
- Communication
- Learning Ability

**Upskilling &
Reskilling**

*through HRDC and/or
SSDC programmes*

Additional Skills

Specific Skills

Non-exhaustive

- Geometric Dimensioning and Tolerancing
- Troubleshooting
- Robotics and Automation Application
- Aircraft Technology Management
- Quality Operation
- Troubleshooting

*On-the-job Coaching and
Mentoring*

Specific Skills

Non-exhaustive

- Assembly, Testing & Packaging
- Operations & Control
- Workplace Safety and Health System Management

*On-the-job Coaching and
Mentoring*

Potential Jobs

Drone Pilot

Aircraft maintenance skills enable smooth transition to skilled, safety-conscious drone piloting.

Assembly, Test & Packaging Operator

Experience in precision, safety, troubleshooting, teamwork, supports E&E responsibilities.

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60 emerging roles identified across 10 sectors

KEY FINDING 5

- 29 unique emerging roles will become increasingly important in the next 3-5 years.
- 4 roles are common across 4 or more sectors:
 - AI Engineer / Specialist / Technician
 - Data Engineer / Analyst
 - Data Scientist
 - Sustainability Engineer / Specialist / Coordinator

60 emerging roles identified across 10 sectors

KEY FINDING 5

These roles are categorised into 3 main categories:

- **AI and Digital:** Encompasses roles related to artificial intelligence, data science, digital marketing, and cloud computing.
 - Underscores the growing influence of technology across various sectors.
- **Green Economy:** Focuses on roles driving sustainability initiatives, such as sustainability engineers and chemical recycling engineers.
 - Reflects the increasing importance of sustainability and environmental concerns.
- **New Tech:** Includes roles associated with emerging technologies like drone piloting, additive manufacturing, and advanced materials science.
 - Highlights the rapid pace of technological innovation and its impact on the job market.

AI & Digital



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**AI Engineer/
Specialist/Technician**



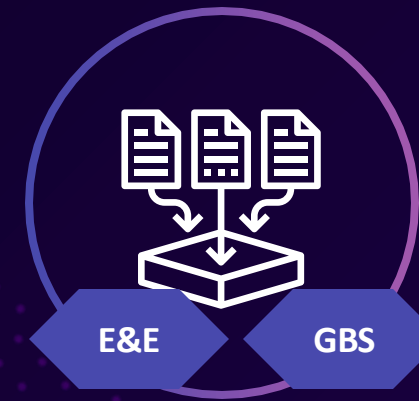
**Data Engineer/
Analyst**



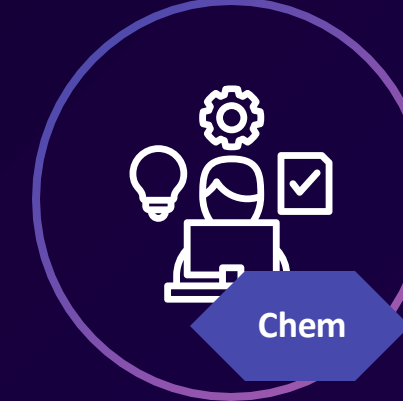
Data Scientist



**System Integration (SI)
Engineer**



Data Steward



**Digital Project
Manager**



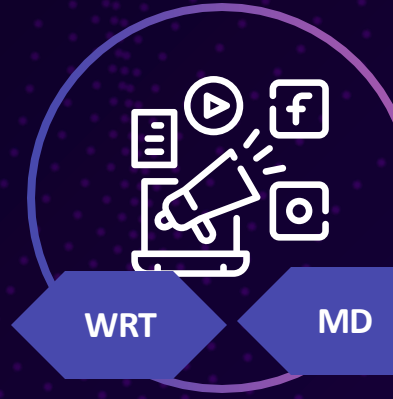
**Digital Personal
Shopper/ Stylist**



**Computational
Biologist**



System Architect



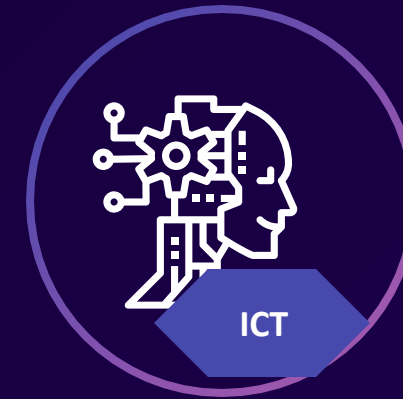
**AI Digital Marketing/
Innovation Specialist**



Digital Analyst



**Telehealth & Remote
Monitoring Specialist**



AI Ethicist



AI Auditor



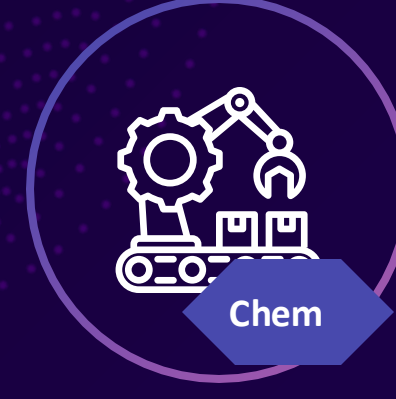
**IoT 'Smart'
Engineers / Specialists**



**Advance Materials
Scientist**



**Computing
Researcher**



**Robotics
Engineer**



Prompt Engineer



**Smart Manufacturing & AI
IR 4.0 Analyst**

Green Economy

New Tech



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GROUP OF COMPANIES



**Sustainability Engineer /
Specialist / Coordinator**



Bioprocess Engineer

FMS



**Drone Pilot /
Autonomous Operator**

Aero

FMS



**Additive Manuf.
Technician**

Aero



Live Host

WRT



Energy Manager

E&P



Energy Economist

E&P



Food Biotechnologist

FMS



Bot Trainer

GBS

Key Findings

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Digital Fluency & Sustainability Awareness are essential.

KEY FINDING 6

- As indicated by industry stakeholders, these foundational skills are no longer optional but are necessary for individuals to adapt in a world increasingly shaped by rapid technological advancements and the growing need for sustainable practices.
- As industries pivot towards a digital and environmentally-conscious future, possessing these skills is crucial for long-term career relevance and growth, **even for non-tech roles.**

**Top 10
In-Demand
Basic Skills**
KEY FINDING 6



Total Basic Skills: ~16

KEY FINDING 6



Total Specific Skills: ~848



MyMahir Future Skills Talent Council (FSTC) by Sector

Objective

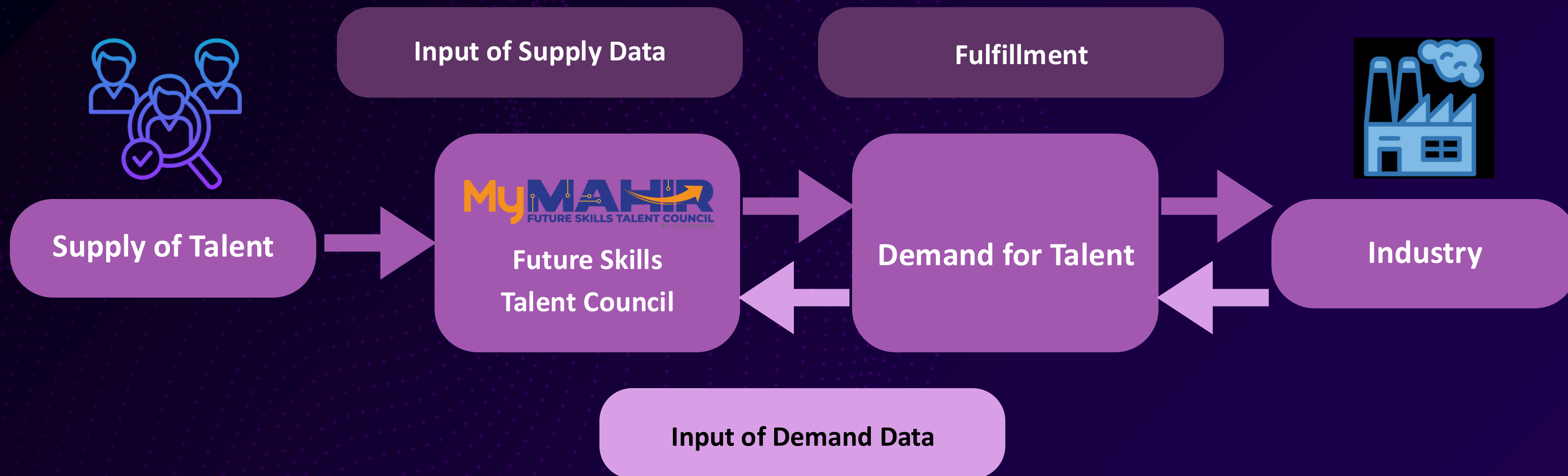
To cultivate a skilled, diverse, and innovative workforce that drives excellence, safety, and sustainability within the sector

Vision

To cultivate a dynamic & innovative sector workforce that leads the industry into a future defined by excellence, safety, and sustainability and adaptability evolving sector landscape.

Mission

To bridge the gap between industry requirements and workforce capabilities and to **nurture a highly adaptable talent pool** capable of spearheading within the sector industry and fostering economic growth.



10 SECTORS COMPLETED



30 JULY 2024

MyMAHIR FSTC GLOBAL SERVICES + DATA CENTRE SECTOR

No of Members
Primary: 11 Alternate: 7



28 AUGUST 2024

MyMAHIR FUTURE SKILLS TALENT COUNCIL WHOLESALE & RETAIL SECTOR INAUGURAL MEETING

No of Members
Primary: 7 Alternate: 6



11 SEPTEMBER 2024

MyMAHIR FUTURE SKILLS TALENT COUNCIL HOTEL & TOURISM SECTOR INAUGURAL MEETING

No of Members
Primary: 8 Alternate: 6



19 SEPTEMBER 2024

MyMAHIR FUTURE SKILLS TALENT COUNCIL ENERGY, POWER & CHEMICAL

No of Members
Primary: 10 Alternate: 3



30 JULY 2024

MyMAHIR FUTURE SKILLS TALENT COUNCIL MEDICAL DEVICES SECTOR INAUGURAL MEETING

No of Members
Primary: 11 Alternate: 7



10

SECTORS COMPLETED



6 MARCH 2024

MyMAHIR FSTC E&E Sector

No of Members
Primary: 12 Alternate: 12



29 APRIL 2024

MyMAHIR FSTC ICT SECTOR

No of Members
Primary: 9 Alternate: 8



15 MAY 2024

MyMAHIR FSTC AEROSPACE SECTOR

No of Members
Primary: 10 Alternate: 3



21 JUNE 2024

MyMAHIR FSTC BIOPHARMA & MANUFACTURING SECTOR

No of Members
Primary: 6 Alternate: 6



17 JULY 2024

MyMAHIR FSTC FOOD MANUFACTURING SERVICES SECTOR

No of Members
Primary: 10 Alternate: 3



GOVERNMENT | INDUSTRY | ACADEMIA | TRAINING PROVIDERS

“G.I.A.T” RECOMMENDATIONS - ENABLERS

Establish an **Impact Study Implementation and Monitoring Unit (IMU)** to oversee execution of the initiatives (**potentially led by TalentCorp with FSTC**)



Develop a **policy to mandate industry players to upskill/ reskill** their workforces impacted by AI, Digital and Green Economy



Create a **Talent Data Repository (TDR)** to collate, assess, update and project the demand and supply of skilled workforce by each sector



G.I.A.T



Government

- Financial incentives for R&D efforts
- Financial support to upskill & reskill employees
- Pool existing infrastructures to serve as training centers



Industry

- In-house training & development programmes
- Talent retention strategies
- Strengthen industry-academia collaboration

G.I.A.T



Academia

- Education curriculum refresh (starting from pre-school)
- Extend Internship programmes



Training Providers

- Develop micro-credentials training programmes
- Onboard certified trainers



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GROUP OF COMPANIES



Healthcare



Air Transport



Tourism



Agriculture



Construction



Public Transport



For more information, visit us at:

www.mymahir.my

UPCOMING: PHASE 2



Comms &
Multimedia



Hotel &
Accommodation



Automotive



Sea Transport



Oil & Gas



E&P
(Commercial)



MINISTRY OF HUMAN RESOURCES

STRATEGIC. VISIONARY. LEADING

PREPARING THE WORKFORCE FOR THE FUTURE