The National Board of Digital Economy and Society Office

ASEAN AI TRANSITION INNOVATION FRAMEWORK

The National Board of Digital Economy and Society Office (BDE) was established on September 16, 2016, in accordance with the Restructuring of Government Agencies Act (No. 17), B.E. 2559 (2016), alongside the establishment of the Ministry of Digital Economy and Society.

Subsequently, on January 25, 2017, the Digital Development for Economy and Society Act, B.E. 2560 (2017) was enacted. This legislation defined the powers and duties of the Office in its capacity as the secretariat for the National Digital Economy and Society Commission.

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The National Board of Digital Economy and Society Office (BDE)
Ministry of Digital Economy and Society
Thailand
Tel: +668 0072 7072
Email: saraban@bde.go.th
https://www.bde.go.th/

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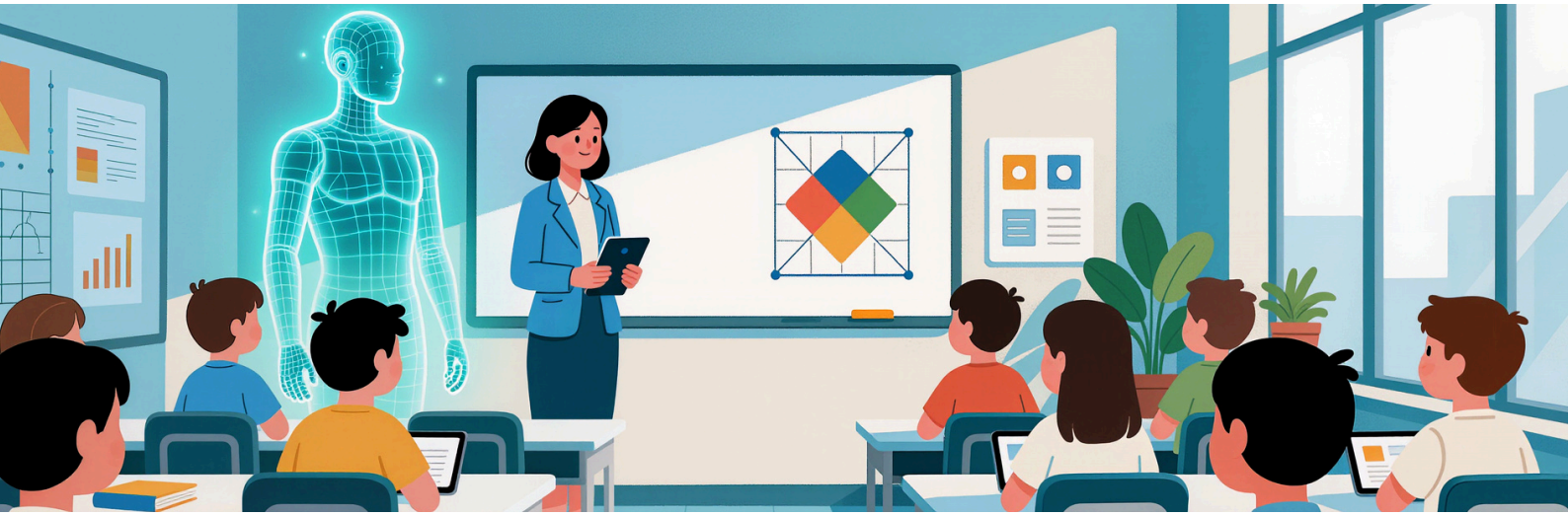


ASEAN has demonstrated substantial progress in advancing regional digital transformation through key strategic instruments, including the ASEAN Digital Masterplan 2030 (ADM2030), and the negotiation of the ASEAN Digital Economy Framework Agreement (DEFA). In alignment with these regional priorities, this report presents the ASEAN AI Transition Innovation Framework (AITIF) project, which was formally endorsed at the 5th ASEAN Digital Ministers' Meeting (ADGMIN) and its related meetings, hosted by Thailand from 13–17 January 2025, as part of its official implementation process.

These initiatives underscore the region's commitment to talent mobility, digital inclusion, responsible AI, and the adoption of emerging technologies. Building on this momentum, the ASEAN AI Transition Innovation Framework (AITIF) offers a structured and forward-looking pathway for ASEAN to navigate AI-driven transformation in ways that reflect the region's diverse socio-economic, infrastructural, and cultural contexts.

The AITIF consists of 3 main parts:

1. The ASEAN AI Literacy Framework (AILF), including its Skill Taxonomies and Skill Checklists
2. A "Responsible AI" online course derived from selected competencies within the AILF, and
3. The AI Readiness Assessment Tool (AIRAT).

Together, these outputs respond to the global need for AI capability development while tailoring solutions to ASEAN's linguistic diversity, varying levels of digital maturity, and heterogeneous workforce skills. The AILF outlines competencies for four groups of users—general public, workers who use AI to enhance their tasks, developers and engineers who build AI systems, and leaders who manage organizations using AI. Grounded in hybrid AI concepts that combine knowledge-driven and data-driven approaches, the framework introduces modular skill taxonomies, embeds ethical principles across most skills and knowledge areas, and emphasizes human-centric attributes essential for safe, responsible, and inclusive AI adoption.

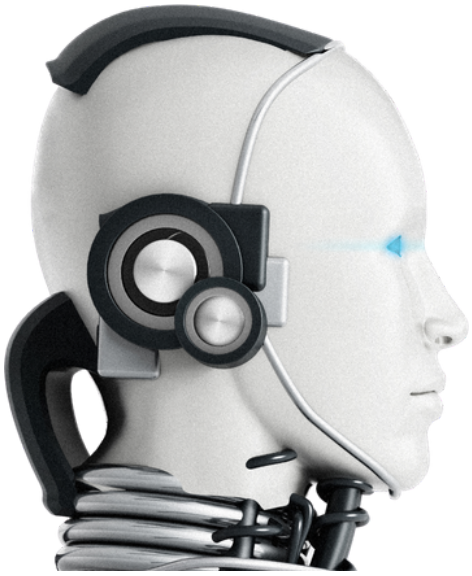
From this competency structure, the Responsible AI online course is developed as a focused learning initiative. It draws from AILF skills and related sub-skills prioritized in alignment with ASEAN's collectively agreed priorities and concerns, with particular emphasis on ethical awareness, safe use of AI, societal impacts, transparency, and accountability. The course provides accessible, practical content designed to strengthen baseline understanding of responsible AI among ASEAN citizens, workers, and organizations—filling critical literacy gaps and supporting region-wide responsible adoption.

The AIRAT utilized these literacy-focused outputs by offering a structured mechanism for assessing organizational readiness for AI. Through well-defined readiness levels, pillars, and dimensions, the tool reflects ASEAN's priorities in responsible AI, digital inclusion, business-process quality, and infrastructure disparities.

AITIF is informed by leading international frameworks—including those from OECD, UNESCO, WEF, the European Commission, AAAI/CSTA, and major industry readiness tools from Singapore, Cisco, IBM, Deloitte, and Oxford Insights—while remaining distinctively ASEAN-centric. Its emphasis on multilingual environments, uneven digital infrastructures, dynamic job requirements, and inclusiveness ensures regional relevance alongside global alignment. Collectively, the AILF, the Responsible AI online course, and the AIRAT position ASEAN to elevate AI literacy, strengthen organizational preparedness, and advance responsible and equitable AI adoption throughout the region.

INTRODUCTION

Artificial Intelligence (AI) is one of the most transformative and widely discussed technologies of the century. Since AI is now embedded in most of the devices around us from the phone to the fridge, to the oven, in the shower, in our cars, and everywhere in our offices, most of us interact with technology as soon as we open our eyes in the morning until we go back to bed. If we ever want to transform the way we work, the way we live, it is obvious that AI is the technology that we must focus on.



AI is not at all new. The field has been first discussed in the first AI conference at Dartmouth in 1956, where one of the founders of the field, John MaCarthy coined the term "Artificial Intelligence".

Despite it was first coined since 1950s, various definitions existed for the term. This includes:

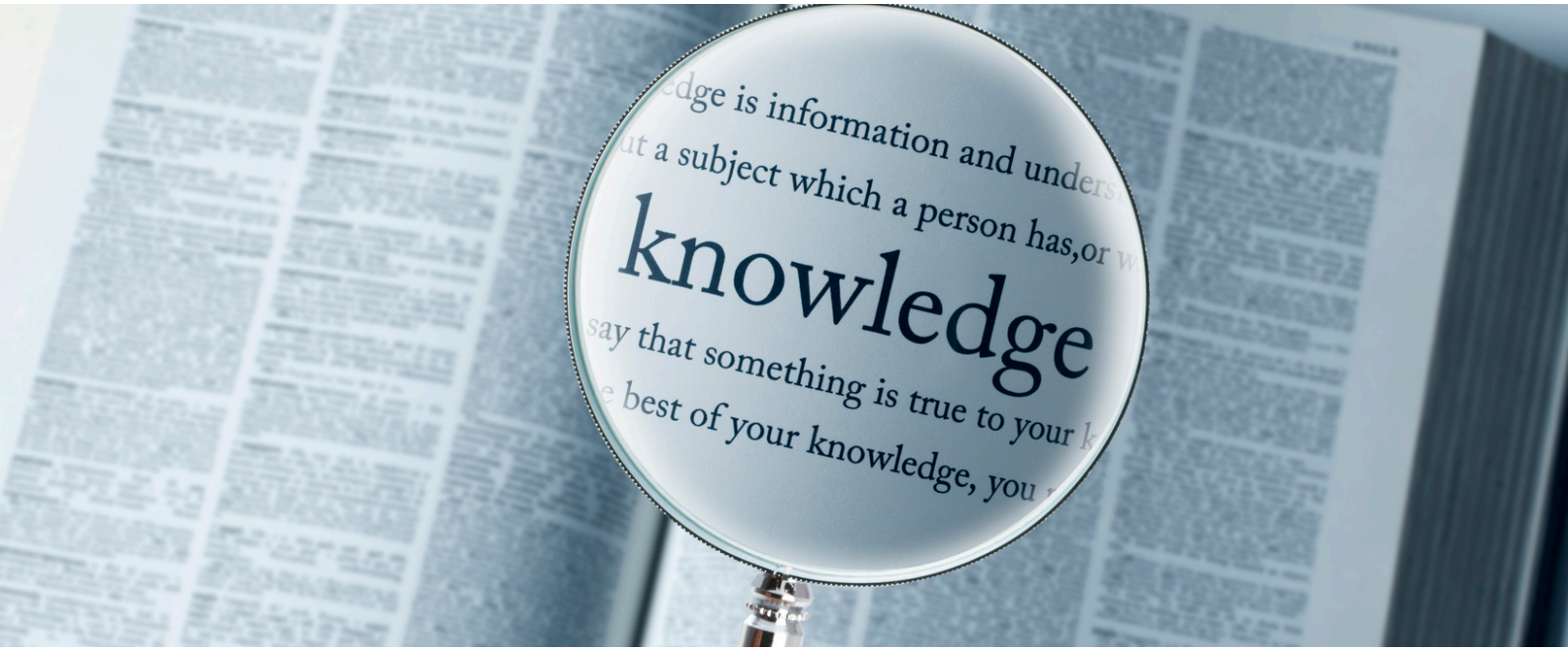
"*Artificial Intelligence (AI) is usually defined as the science of making computers do things that require intelligence when done by humans.*" Jack Copeland[1]

"*AI is a machine's ability to perform the cognitive functions we associate with human minds, such as perceiving, reasoning, learning, interacting with the environment, problem-solving, and even exercising creativity.*" McKinsey & Company[2]

"*Artificial intelligence (AI) is a set of technologies that empowers computers to learn, reason, and perform a variety of advanced tasks in ways that used to require human intelligence, such as understanding language, analyzing data, and even providing helpful suggestions.*" Google[3]

[1] https://www.alanturing.net/turing_archive/pages/reference%20articles/what%20is%20ai.html
[2] https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-ai
[3] https://cloud.google.com/learn/what-is-artificial-intelligence

FROM "KNOWLEDGE" TO "DATA" TO "HYBRID"



From the beginning, one of the most direct approaches to developing AI is to provide systems with human "knowledge". As a result, early AI systems were developed by gathering and encoding human knowledge into the systems. Unfortunately, during those early days, gathering knowledge from human experts seems to be a major bottleneck of the development process. The difficulties of acquiring human knowledge led to several research fields, such as Knowledge Acquisition and Knowledge Representation, with large amounts of research invested.

Then, approximately at the end of 1990s, a few fields related to acquiring knowledge by analyzing data and using results of the analysis as knowledge for the systems emerged. Since then, until today, most of the AI systems have been developed by analyzing vast amounts of data instead of relying on human knowledge. However, there is no such thing as perfect solution. The data-driven approach itself can also lead to several issues. This includes cost of data gathering, data processing and preparation, and recently with the use of Large Language Models or LLMs, the cost of computing, acquiring, labelling and analyzing gigantic dataset, hallucinations[4] and unexplainability[5] of the systems that have been developed become the new issues. These issues are particularly significant in the ASEAN context, where infrastructure limitations remain a key constraint.

HYBRID AI: AN ALTERNATIVE APPROACH TO AI DEVELOPMENT

Since no single approach is perfect, many researchers and practitioners have increasingly focused on selecting the strengths of each method and combining them in system development. This is often referred to as a "hybrid" approach, where symbolic reasoning, rules, expert knowledge, and other forms of human-curated structures are integrated with data-driven, statistical, or machine-learning techniques, and, recently, Large Language Models (LLMs). In developing AI systems. This means leveraging existing human knowledge, domain logic, and constraints whenever possible, while generating new patterns, representations, or decisions from data when that is better suited to the problem at hand.

Such integration allows systems to benefit from the transparency, auditability, and control of knowledge-based components, while simultaneously gaining adaptability, scalability, and predictive power from learning-based methods. In practice, hybrid architectures can reduce errors, improve explainability, and offer more robust performance in complex environments—especially those where data alone is insufficient or where human judgment remains indispensable.

As AI becomes embedded in larger and more critical applications across finance, healthcare, public services, national security, and societal infrastructure, relying on a single paradigm is no longer viable. Hybrid AI represents the most practical and strategic pathway forward, enabling systems that are not only intelligent, but also trustworthy, resilient, and aligned with real-world requirements.

[4] https://www.ibm.com/think/topics/ai-hallucinations
[5] https://www.oceg.org/the-explainability-challenge-of-generative-ai-and-llms/

Some of AI-Related Initiatives in ASEAN

BRUNEI DS

- The AI Governance and Ethics Working Group (WG-AIGE)
- AI Ready ASEAN with Google
- AI Guidance for Schools Toolkit
- Artificial Intelligence Governance and Ethics for Brunei Darussalam
- (Draft) Guide on Artificial Intelligence Governance and Ethics for Brunei Darussalam Version 2.0
- Brunei ICT Industry Competency Framework

CAMBODIA

- Cambodia National AI Strategy 2025–2030 (Draft)
- Cambodia AI Readiness Assessment (UNESCO RAM, 1 July 2025)
- AI Landscape in Cambodia – Current status and future trends
- Digital, Media, and Information Literacy (DMIL) Competency Framework
- National AI Research Center on Education (RAIE)
- ICT–AI Competency Framework for Teachers
- Cambodia Digital Skill Development Roadmap 2024-2035
- Techo Digital talent scholarship
- Cambodia Financial Technology Development Policy 2023-2028
- Digital Economy and Society Policy Framework 2021–2035

INDONESIA

- The National Artificial Intelligence Roadmap (2025-2029)
- The Concept of Artificial Intelligence Ethics Guidelines

LAOS

- National Digital Economy Vision (2021–2040)
- National Digital Economy Development Strategy (2021–2030)
- National Digital Economy Development Plan (2021–2025)
- (Draft) The National Artificial Intelligence Strategy

MALAYSIA

- AI Class ASEAN with Google
- AI for the People
- Malaysia Artificial Intelligence Ethics and Governance (AIGE)
- Malaysia National Artificial Intelligence Roadmap (2026-2030)
- The National AI Action Plan 2030 (NAIAP)

MYANMAR

- (Draft) National Artificial Intelligence Development Policy
- (Draft) Myanmar National Artificial Intelligence Strategy (2025-2030)

PHILIPPINES

- Policy Note on Artificial Intelligence
- Strengthening the Philippine Workforce through Adaptive and Responsive Digital Knowledge (SPARK)

SINGAPORE

- National AI Strategy 2.0
- AI Singapore (AISG)
- AI Readiness Index (AIRI)
- GenAI Starter Kit
- Certis-SUTD AI Literacy Programme

THAILAND

- Thailand National AI Strategy and Action Plan (2022 – 2027)
- THAI Academy Program with Microsoft
- Completed UNESCO AI Readiness Assessment (RAM)
- Thailand AI Ethics Guideline
- Generative AI Governance Guideline
- AI Literacy

Timor-Leste

- Timor-Leste Strategic Development Plan 2011-2030 (SDP 2011–2030)
- Completed UNESCO AI Readiness Assessment (RAM)
- Timor Digital 2032
- Nationwide Digital Skills Program

VIETNAM

- AI Landscape Assessment (AILA)
- AI for All with Intel
- Inclusive Use of Artificial Intelligence in Vietnamese Education (IUAIVE)

Interesting Patterns in ASEAN

Quite a few projects about developing powerful ecosystem for AI development/testing

Most training is predominantly geared toward commercial applications

Most of the training programs relates to data-driven AI

Some of AI-Related Initiatives Outside ASEAN

- America's AI Action Plan (White House)
- Advancing Artificial Intelligence Education for American Youth
- National Artificial Intelligence Research Resource (NAIRR) Pilot
- Creating Helpful Incentives to Produce Semiconductors and Science Act: CHIPS and Science Act
- NIST AI Risk Management Framework (AI RMF)

- Japan's National AI Strategy
- AI Promotion (Utilization) Act (May 28, 2025)
- Moonshot (Moonshot Research and Development Program
- AI Guidelines for Business Ver1.0
- Act on Promotion of Research and Development and Utilization of Artificial Intelligence-Related Technologies (the "AI Bill")

- AI Action Plan (2025)
- Next Generation Artificial Intelligence Development Plan
- "AI Plus" Plan
- National Integrated Computing Network (NICN)
- AI Governance, Regulation & Standards Framework

- AI Literacy (PISA 2029) Framework
- The Digital Education Action Plan (2021-2027)
- Coordinated Plan on Artificial Intelligence
- EU AI Act

Interesting Patterns Outside ASEAN

Coordinated efforts for advanced R&D is quite common

Most of them talk about "shared" powerful ecosystem for AI R&D

Most of the training programs relate to data-driven AI

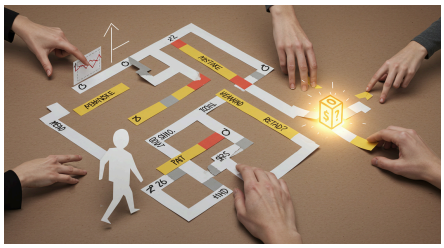
CORE IDEAS SHAPING THE AITIF

KEY CONCEPTS AT A GLANCE

To develop a framework that serves as a strategic guideline for ASEAN's transformation through the effective use of AI-based technologies, the following core ideas have guided the development of both the AI Literacy Framework and the AI Readiness Assessment Tool under this project. These ideas reflect a shared foundation to ensure coherence, long-term applicability, and practical adoption across diverse national and organizational contexts within ASEAN.

Gather ideas for the framework and tool from existing well-known frameworks and tools

For the AI Literacy Framework, the focus for workers and developers is on hybrid approaches to AI system development, rather than purely data-driven methods. From the general public's perspective, the framework guides individuals to use AI more critically, to demand explainability, and to exercise appropriate human oversight.

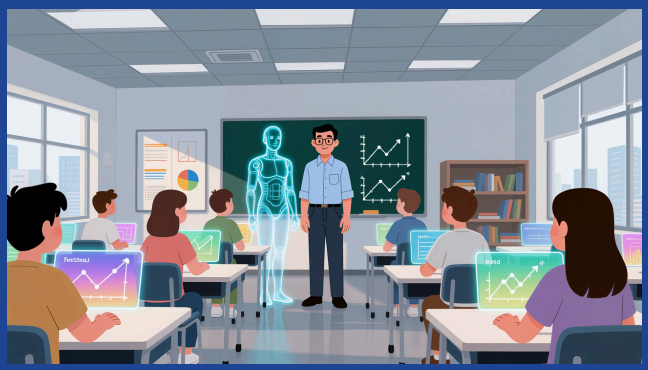


For the AI Readiness Assessment Tool, add current issues in AI development and dimensions related to promoting ASEAN values into the assessment

OVERVIEW OF THE AITIF

Recently, AI has been widely recognized as a strategic tool for both organizations and countries around the world. As a result, knowing and understanding how AI technologies work—their limitations, associated risks, and the need for human oversight—while at the same time being able to maximize their potential, are key principles for everyone are the key ideas for everyone. The objective of AITF is to facilitate ASEAN's transformation through the strategic application of the AI Literacy Framework and the AI Readiness Assessment as primary enablers of the transition. This initiative aligns with the ASEAN Digital Economy Framework Agreement (DEFA) negotiations especially in enhancing talent mobility and standardizing AI policies. This project also supports ASEAN Digital Masterplan 2025 particularly in promoting sustainable digital inclusion and improving government services within the AMS.

Two main outputs of the AITF



AI Literacy Framework, which contains:

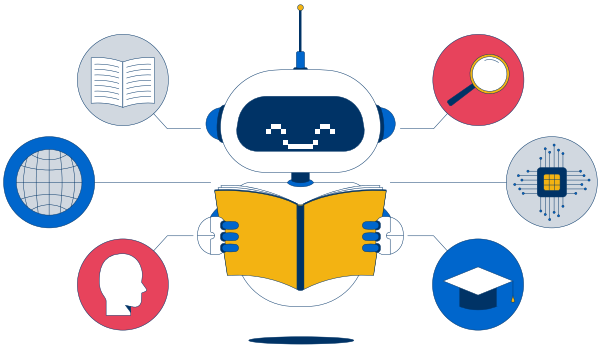
- AI Skill Taxonomies
- AI Skill Checklist

AI Readiness Assessment Tool

AI LITERACY FRAMEWORK (AILF)

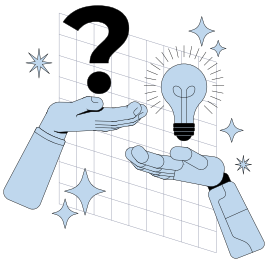
AI LITERACY

"AI literacy is a set of competencies that enables individuals to understand, evaluate, and use AI technologies safely and ethically across every day and workplace contexts."



GROUNDED IN ESTABLISHED FRAMEWORKS

Every literacy framework is unique. Every framework is developed based on a certain idea or aims at dealing a certain challenge of a particular field. However, regardless of their differences, one of the most important issues in developing any literacy related frameworks is ensuring that the developed framework can systematically compare with others. This is critical especially when encouraging mobility of talents within ASEAN, which is one of the 5 enablers prioritized in ASEAN Digital Economy Framework Agreement (DEFA).



To ensure that the developed framework in this AITIF project is aligned with other related AI literacy frameworks that currently exist. There are a number of AI literacy frameworks that have been developed around the world. Examples of the frameworks that influenced how this AI literacy framework is develop include:

1. **AILit Framework** by European Commission and OECD

2. **AI Skills for Business Competency Framework** by The Alan Turing Institute and The Alliance for Data Science Professionals (AfDSP)

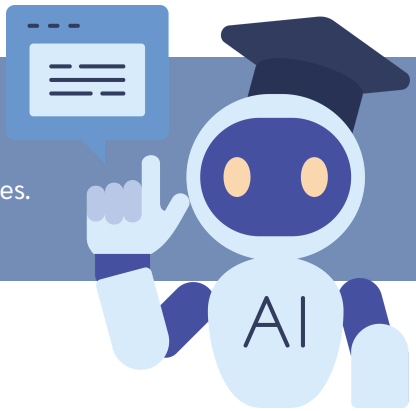
3. **AI4K12 5 Big Ideas in AI** by Association for the Advancement of Artificial Intelligence (AAAI) and The Computer Science Teachers Association (CSTA)

4. **AI Competency Framework for Students** by UNESCO

5. **AI Competency Framework for Teachers** by UNESCO

RATIONALE

To equip ASEAN skilled workers with Hybrid AI-related competencies that align with our values and take into consideration different languages and levels of infrastructures.



FRAMEWORK DEVELOPMENT APPROACH

At a high level, the AILF is grounded in the overarching goal of advancing 'Competencies for Hybrid AI' The development of the framework is guided by the following four core principles:

- Support Mobility of Skilled Workers
- Support Both Knowledge and Data-Driven AI
- Consider Variety of Languages and Levels of Infrastructures
- Ethics is Part of Every Knowledge and Skills
- Grounded in AI fundamentals to remain valid over time
- Allows modular configuration of skills and knowledge

TARGET GROUPS

The AILF is designed with a focus on four primary user groups, namely:

General Public

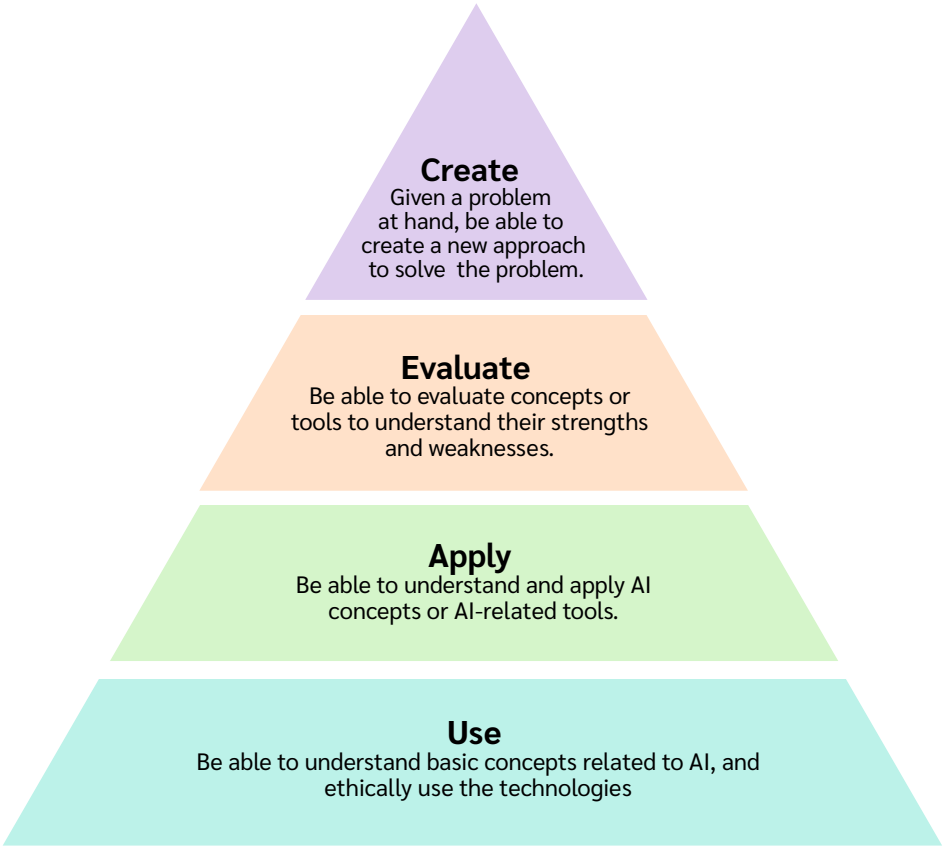
Worker
Adapt AI in their Works

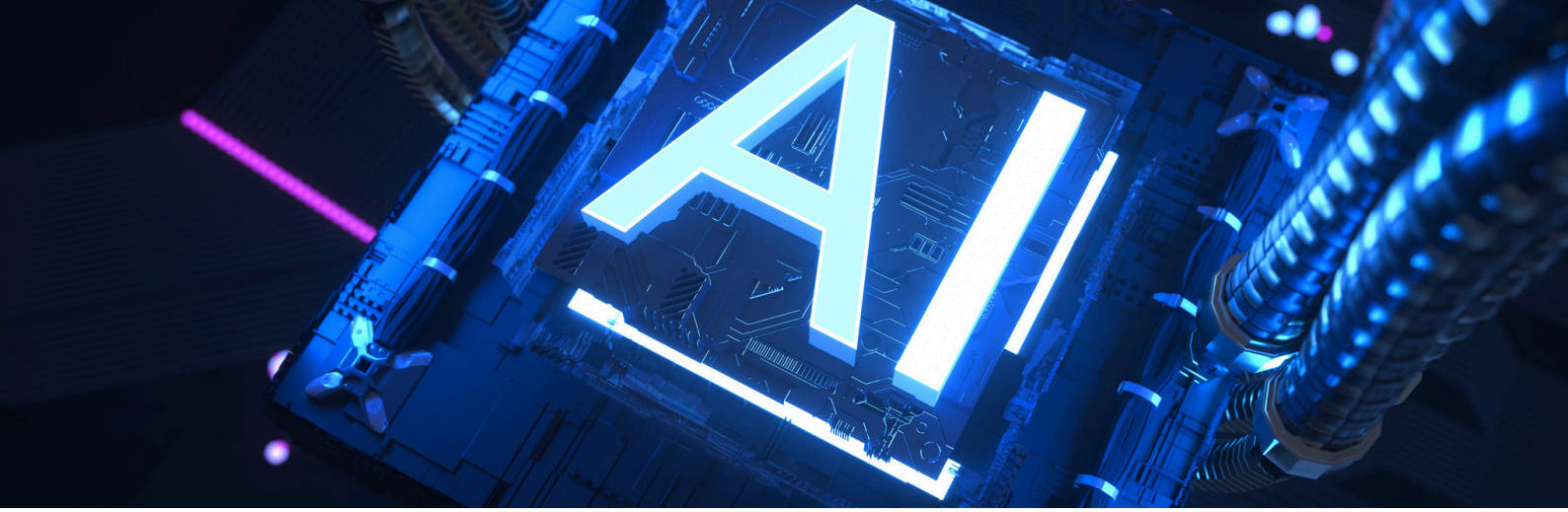
Developer
Design & Develop AI

Leader
Management in AI Era

FOUR LEVELS OF SKILLS

AILF emphasizes the development of competencies across four distinct skill levels.





The AILF categorizes users into four distinct roles:

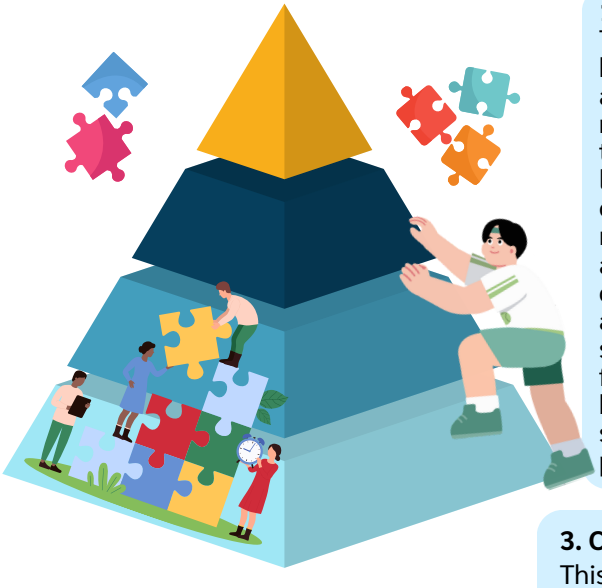
1. **Utilize AI** - This group represents general public users who aim to understand foundational AI concepts and to use AI technologies effectively and ethically in their daily lives.

2. **Adapt AI** - This group comprises individuals working across various types of organizations who seek to understand and use AI concepts and tools to enhance the efficiency and effectiveness of their work.

3. **Engineer AI** - This group of users focuses on developing deep knowledge and skills in AI concepts and technologies to design, engineer, and operationalize AI systems that address their specific challenges, ensuring scalability and integration into existing infrastructures.

4. **Manage Using AI** - This group of users is typically responsible for managing organizations. Their goal is to effectively leverage AI technologies to support decision-making and address management-related challenges.

AI SKILL TAXONOMIES & CHECKLIST



1. Core Skills/Skill Groups
This refers to the set of knowledge, skills, and attitudes that individuals need to possess and use together in working with or learning AI innovation in order to perform tasks or roles effectively and appropriately within the context. These skill groups are not specific/technical skills, but rather foundational skills that can be applied in many situations and across all professions.

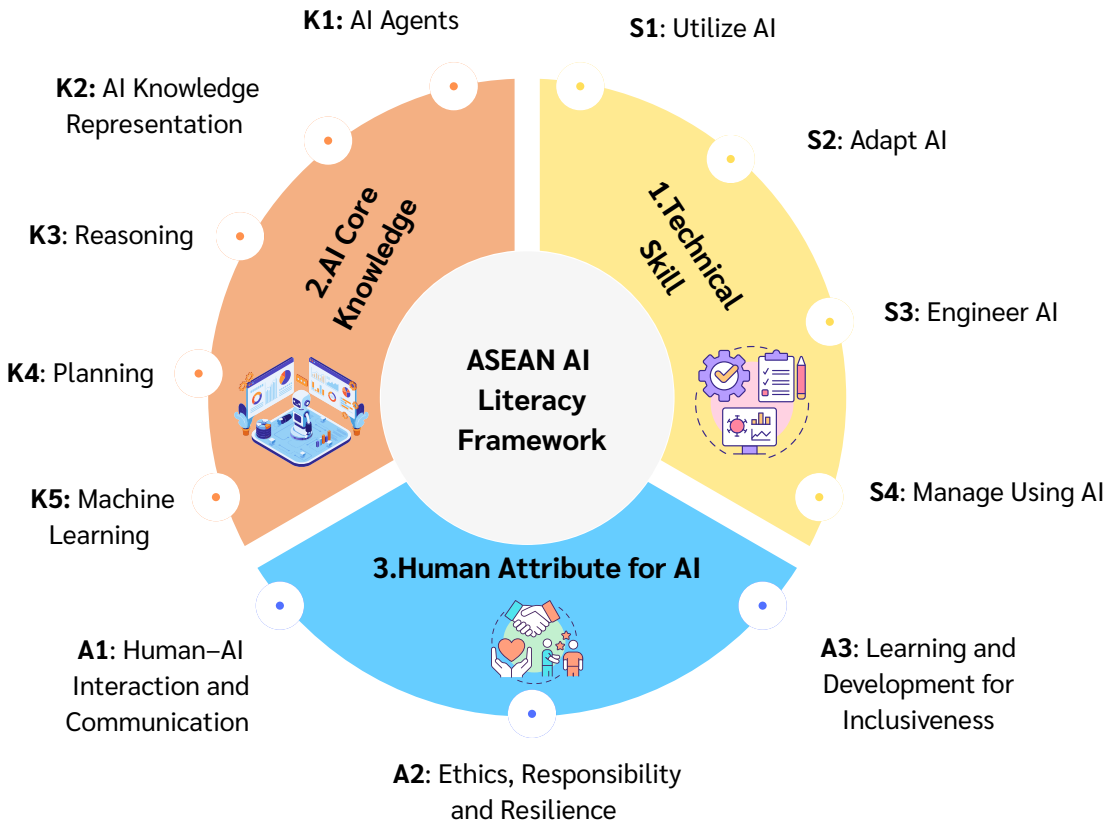
2. Sub-skills
Refers to sub-components or specific skills within a core skill group that support and enable the performance of the core competence or skill to be real and effective.

3. Competency Levels
This refers to the stages or levels of ability that reflect progress in the development of an individual's skills, knowledge, and attributes. It uses established criteria or standards to measure how well an individual can perform tasks or exhibit behaviors according to their competencies, ranging from basic to expert levels. Competency levels are divided into four levels, starting from the basic level (level 1) and ending at the highest level (level 4).

AI SKILL TAXONOMIES & CHECKLIST

The AILF organizes its competency framework into three groups of competencies.

1. Technical Skills
2. AI Core Knowledge, and
3. Human Attribute for AI



Full details of skills and knowledge of all 3 groups can be found in Appendix.

1. Technical Skills

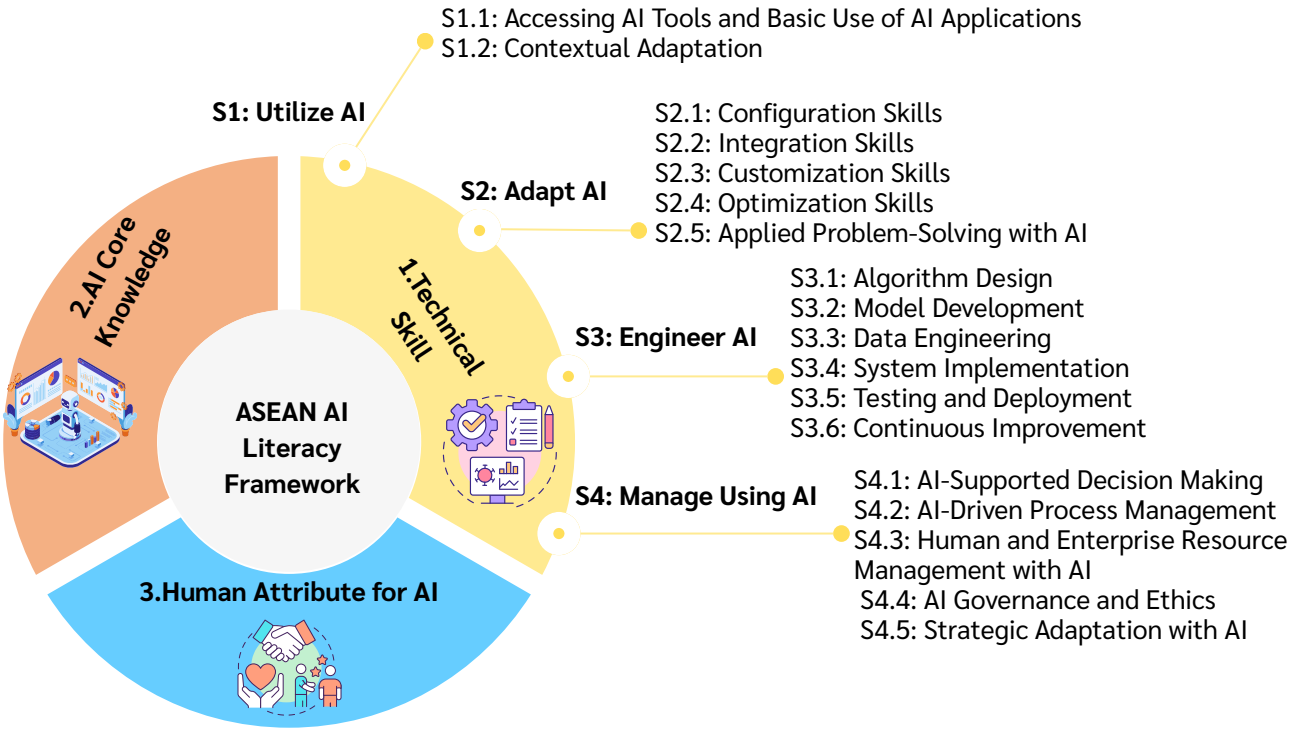
Technical skills refer to an individual's ability to effectively use, apply, develop, and manage artificial intelligence (AI) systems. They cover everything from accessing AI tools, deploying them in real-world situations, engineering design and development, to using AI in strategic management and governance. These skills reflect a progressive advancement in expertise across the general public, organizational personnel, designers and developers, and organizational leaders. In the context of skilled taskforces mobility within ASEAN, this specific cluster of competencies may serve as a structured reference framework for skills mapping, where necessary. These technical skills encompass four core skills and 18 sub-skills:

S1: Utilizing AI
- S1.1: Accessing and Basic Use of AI Tools
- S1.2: Contextual Adaptation and Problem-Solving

S2: Adapt AI
- S2.1: Configuration Skills
- S2.2: Integration Skills
- S2.3: Customization Skills
- S2.4: Optimization Skills (Optimization Skills)
- S2.5: Applied Problem-Solving with AI

S3: Engineer AI
- S3.1: Algorithm Design
- S3.2: Developing New AI/ML Models from Datasets
- S3.3: Data Engineering: Preparing, Managing, and Transforming Data for AI Learning
- S3.4: Developing Programs/Applications that Integrate AI into Systems
- S3.5: Testing and Deployment
- S3.6: Continuous Improvement

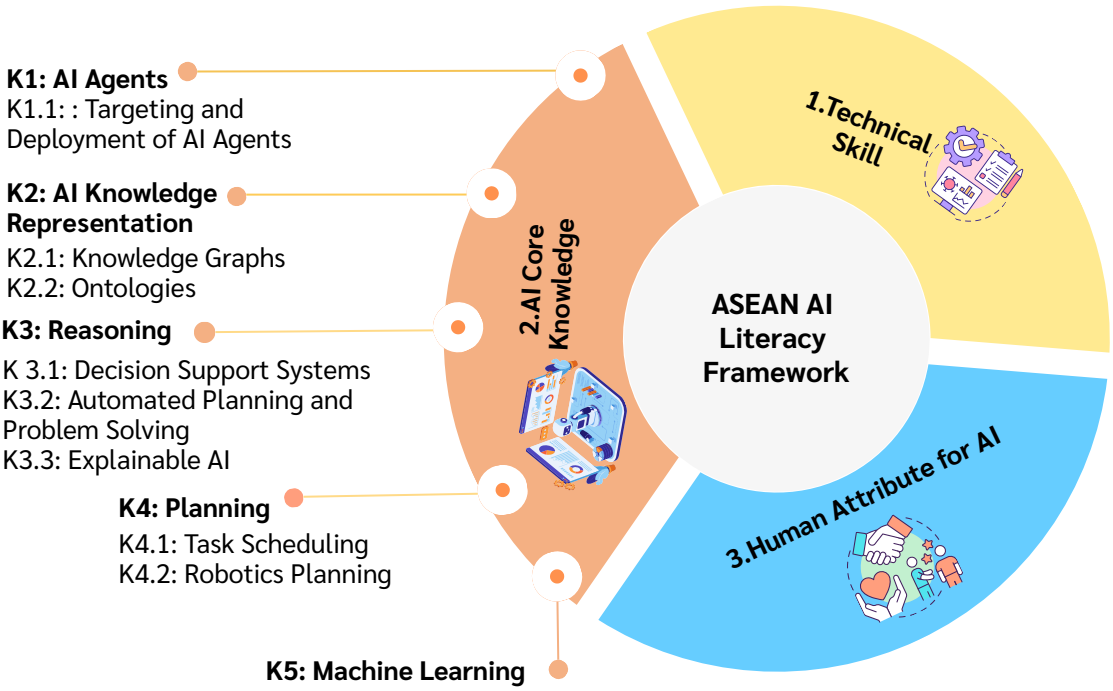
S4: Manage Using AI
- S4.1: AI-Supported Decision-Making
- S4.2: AI-Driven Process Management
- S4.3: Human and Enterprise Resource Management with AI
- S4.4: AI Governance and Ethics
- S4.5: Strategic Adaptation with AI



2. AI Core Knowledge

Core knowledge about AI refers to the basic knowledge that is the foundation to the advanced level that is important for the development and application of artificial intelligence. It consists of 5 core skills and 15 sub-skills:

K1: Design and Development of AI Agents
K1.1: Targeting and Deployment of AI Agents
K2: AI Knowledge Representation
K2.1: Design and Development of Knowledge Graphs
K2.2: Management and Development of Ontologies
K3: Logical Reasoning
K3.1: Decision Support Systems
K3.2: Automated Planning and Problem Solving
K3.3: Explainable AI
K4: Planning
K4.1: Task Scheduling
K4.2: Robotics Planning
K5: Machine Learning
K5.1: Image Recognition
K5.2: Speech Processing
K5.3: Natural Language Processing
K5.4: Predictive Analysis
K5.5: Recommendation System
K5.6: Anomaly Detection
K5.7: LLMs Customization & Deployment



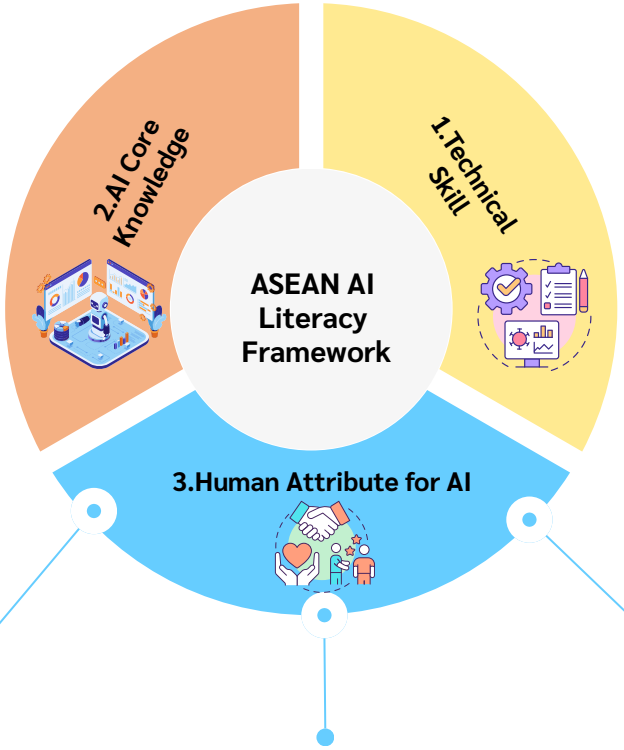
3. Human Attribute for AI

The Human Attribute for AI refers to a set of human characteristics and competencies that personnel should possess when working with AI to ensure the effective, safe, and responsible use of AI. These traits cover interacting with AI, adhering to ethics and responsibility, and learning and developing oneself for equality and inclusion in society. They comprise three core skills and eight sub-skills:

A1: Human–AI Interaction and Communication
- A1.1: Emotional Intelligence
- A1.2: Effective Communication with AI Support
- A1.3: Collaboration and Teamwork

A2: Ethics, Responsibility, and Resilience
- A2.1: Ethics and Integrity
- A2.2: Resilience/Commitment (Resilience/Grit)
- A2.3: Leadership and Governance

A3: Learning and Development for Inclusiveness
- A3.1: Lifelong Learning
- A3.2: Inclusiveness



A1: Human–AI Interaction and Communication

A1.1 Emotional Intelligence
A1.2: Effective Communication with AI Support
A1.3: Collaboration and Teamwork

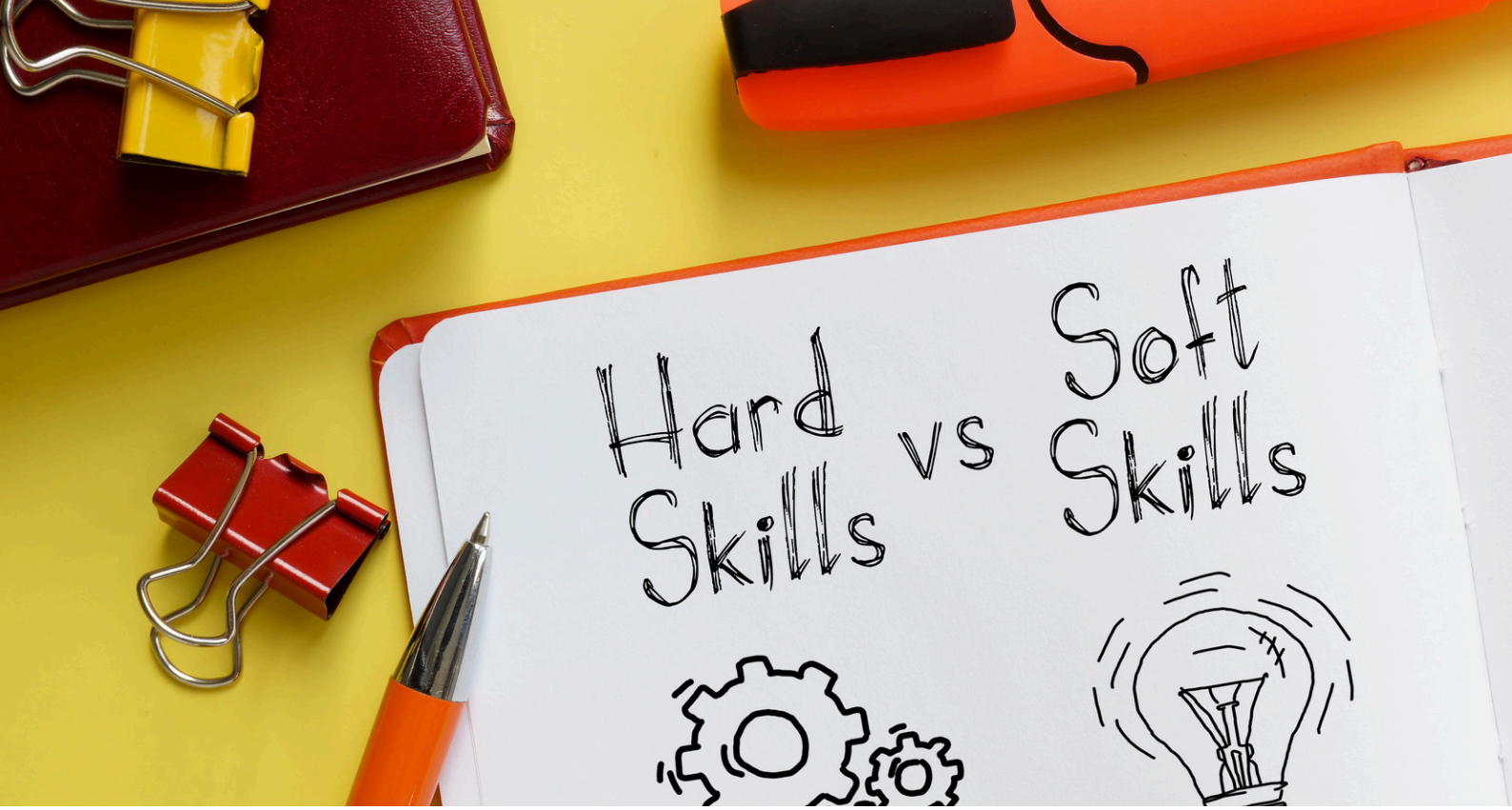
A2: Ethics, Responsibility and Resilience

A2.1: Ethics and Integrity
A2.2: Resilience/Grit
A2.3: Leadership and Governance

A3: Learning and Development for Inclusiveness

A3.1: Lifelong Learning
A3.2: Inclusiveness

APPLYING THE FRAMEWORK



OVERALL PICTURE

Regardless of the role, ethical considerations are already integrated into the majority of skills and knowledge defined in this framework. The following are the steps of how the framework can be effectively utilized.

Step 1:

Choose your group of user

Step 2:

If "S3. Engineer AI" from Step 1 is selected, specialized knowledge and skills may be added

Step 3:

If additional knowledge and skills related to "Human Attribute for AI" is required

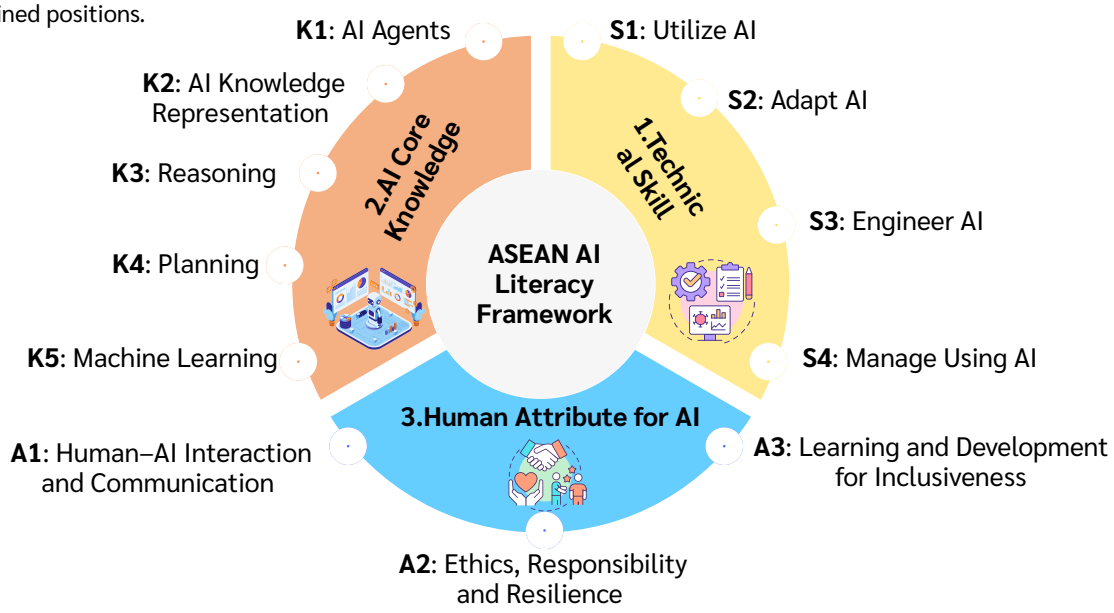
Step 1: According to your interested "group" of user, select related group of skills and knowledge from group "1. Technical Skill"

Step 2: If you choose "S3. Engineer AI" from Step 1, you may choose additional topic(s) in this group that you are interested in

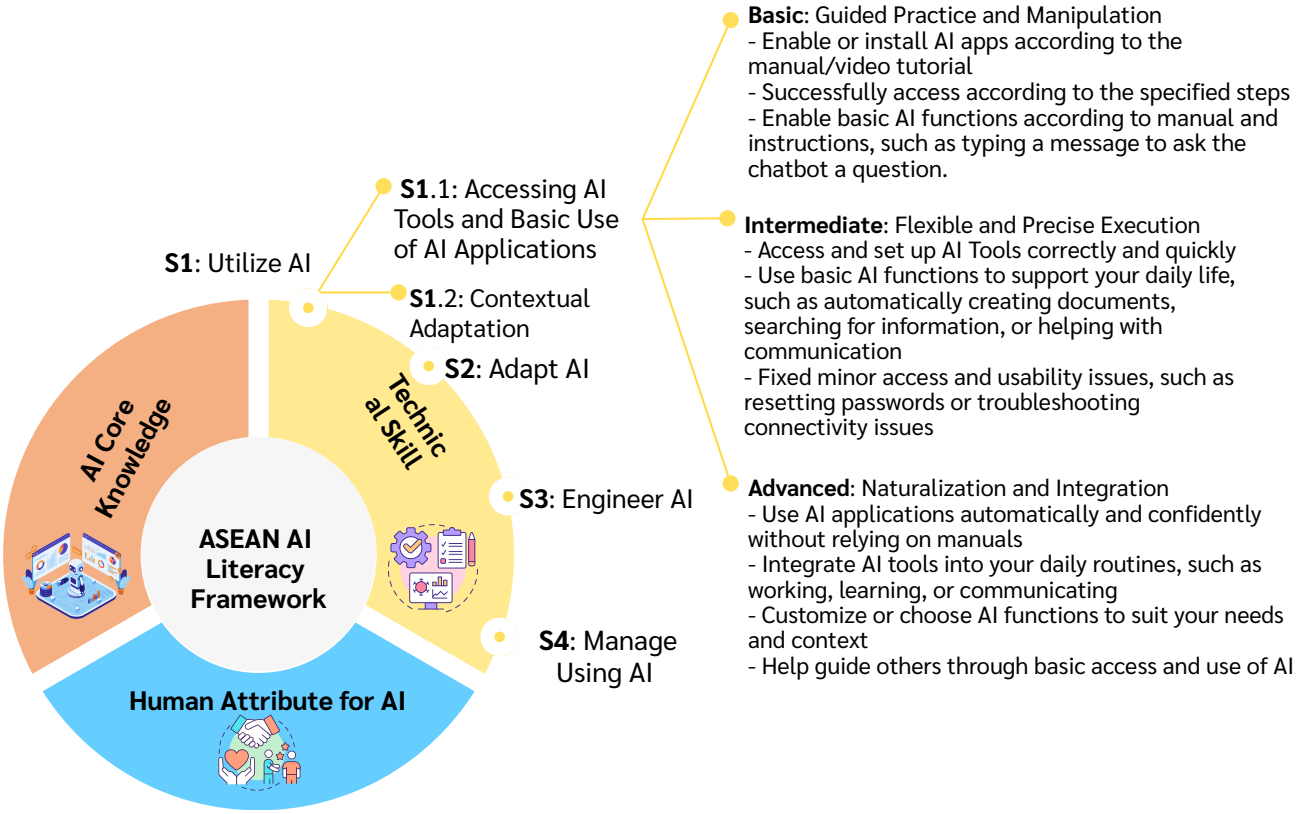
Step 3: If you are interested in one or more skills and knowledge related to group "3. Human Attribute for AI", you may choose additional topic(s) from skills and knowledge provided

Typical Use of the Framework

In general, most of the frameworks have a set of predefined set of skills and knowledge for a set of tasks or roles. For organizations, which means the frameworks can be used in suggesting what skills and knowledge required for each of the predefined positions.



When using AILF, if only standard set of knowledge and skills are required, after select a user group of interest and a required level of competencies, there is a predefined list of skills and knowledge required for the user.



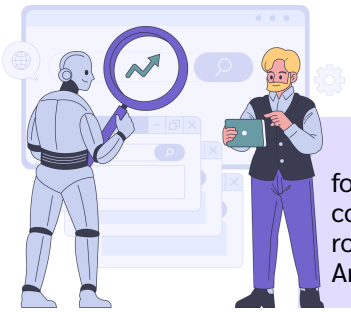
For example, for general public user, the competencies required at “Intermediate” level for “Accessing AI Tools and Basic Use of AI Applications” are:

- *Access and set up AI Tools correctly and quickly*
- *Use basic AI functions to support your daily life, such as automatically creating documents, searching for information, or helping with communication*
- *Fixed minor access and usability issues, such as resetting passwords or troubleshooting connectivity issues*

Using Framework in Human Resource Acquisition Process

In highly dynamic world, even each of the positions in a company may not require the same set of skills and knowledge. For example, “AI Developer” for some of the companies may require someone who are able to use a workflow development tool such as n8n[6] or Microsoft Power Automate[7] and only know Python.

Conversely, within the same organization but in different departments, certain tasks may require personnel who not only possess Python programming skills but also understand system capabilities related to reasoning and agents. Furthermore, if the system being developed is intended for users across multiple ASEAN locations, developers must also have the skills and knowledge to account for varying levels of infrastructure and linguistic diversity across the region. Consequently, such requirements extend beyond what is covered by the predefined elements of existing frameworks.



In response, organizations are moving toward a whole new operating model for work and the workforce that places skills, more than jobs, at the center. One company pioneering this move is Unilever: “We’re beginning to think about each role at Unilever as a collection of skills, rather than simply a job title,” explains Anish Singh, head of HR for Unilever in Australia and New Zealand.[8]

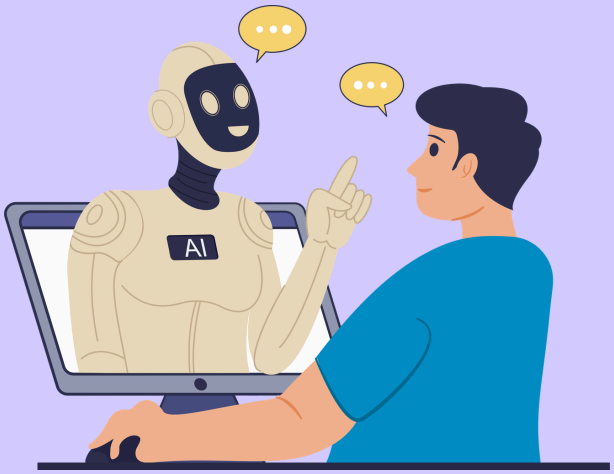
The analysis of the keywords mentioned in job posting published online allows to ascertain how widespread digital skills and technology demands are becoming across a variety of different occupations and the pace by which their use is spreading across jobs. [9]

[6] https://n8n.io/
[7] https://www.microsoft.com/en/power-platform/products/power-automate?market=af
[8] https://www.deloitte.com/us/en/insights/topics/talent/organizational-skill-based-hiring.html
[9] https://www.oecd.org/content/dam/oecd/en/publications/reports/2022/10/skills-for-the-digital-transition_6b5e0b05/38c36777-en.pdf

Using AILF With Dynamic Job's Requirements

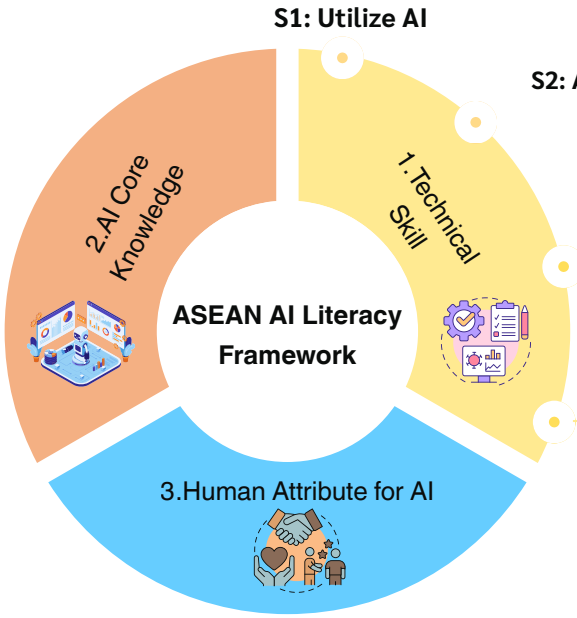
Given the highly dynamic and rapidly evolving requirements seen not only across ASEAN but globally, it is essential for the framework to support flexible mix-and-match combinations of skills and knowledge to meet the specific needs of each role or position.

Drawing on the technical foundations presented in the AI4K12 guidelines by AAAI and CSTA, as well as the dynamic mix - and - match approach to skills and knowledge adopted in the European Commission's and OECD's AI Literacy frameworks, the AILF conceptualizes all skills and knowledge as modular components. These modules can be flexibly combined and tailored to meet differing requirements where appropriate. However, unlike the technically oriented foundations emphasized in AI4K12, the "AI Core Knowledge" in this framework is directed toward practical applications of AI rather than its theoretical underpinnings.



Assume that there is a required **Junior AI developer** who is expected to develop a **multi-agent system** that can both **reasoning** and **plan** according **to** common practices currently existed within the organization. Based on the given requirements for the job, here is how AILF can be used to explicitly list out skills and knowledge required for the position.

According to the 3 steps mentioned above about how to use the AILF, Step 1, in this example, the S3. Engineer AI is selected.



S3.1: Algorithm Design
S3.2: Model Development
S3.3: Data Engineering
S3.4: System Implementation
S3.5: Testing and Deployment
S3.6: Continuous Improvement

According to S3, the following skills and knowledge are required
S3.1: Algorithm Design
S3.2: Model Development
S3.3: Data Engineering
S3.4: System Implementation
S3.5: Testing and Deployment
S3.6: Continuous Improvement

Skills and Knowledge
for a Specific Level of Competencies

Because the requirements in this example pertain to a junior-level developer, the appropriate competency level is the Basic tier. Accordingly, for S3.1 Algorithm Design, the AILF specifies the following skills and knowledge expected at the Basic level. A developer at this stage should be able to:

- write a simple solution procedure in pseudo-code or flowchart, following a given example.
- choose the basic data structure that matches the given problem.
- use basic logic to create simple algorithms.
- test the algorithm with small inputs and verify the correctness of the results.
- minor bug fixes can be made as per suggestions.

By the following the same protocol, the list of required competencies for S3.2. Model Development at basic level are:

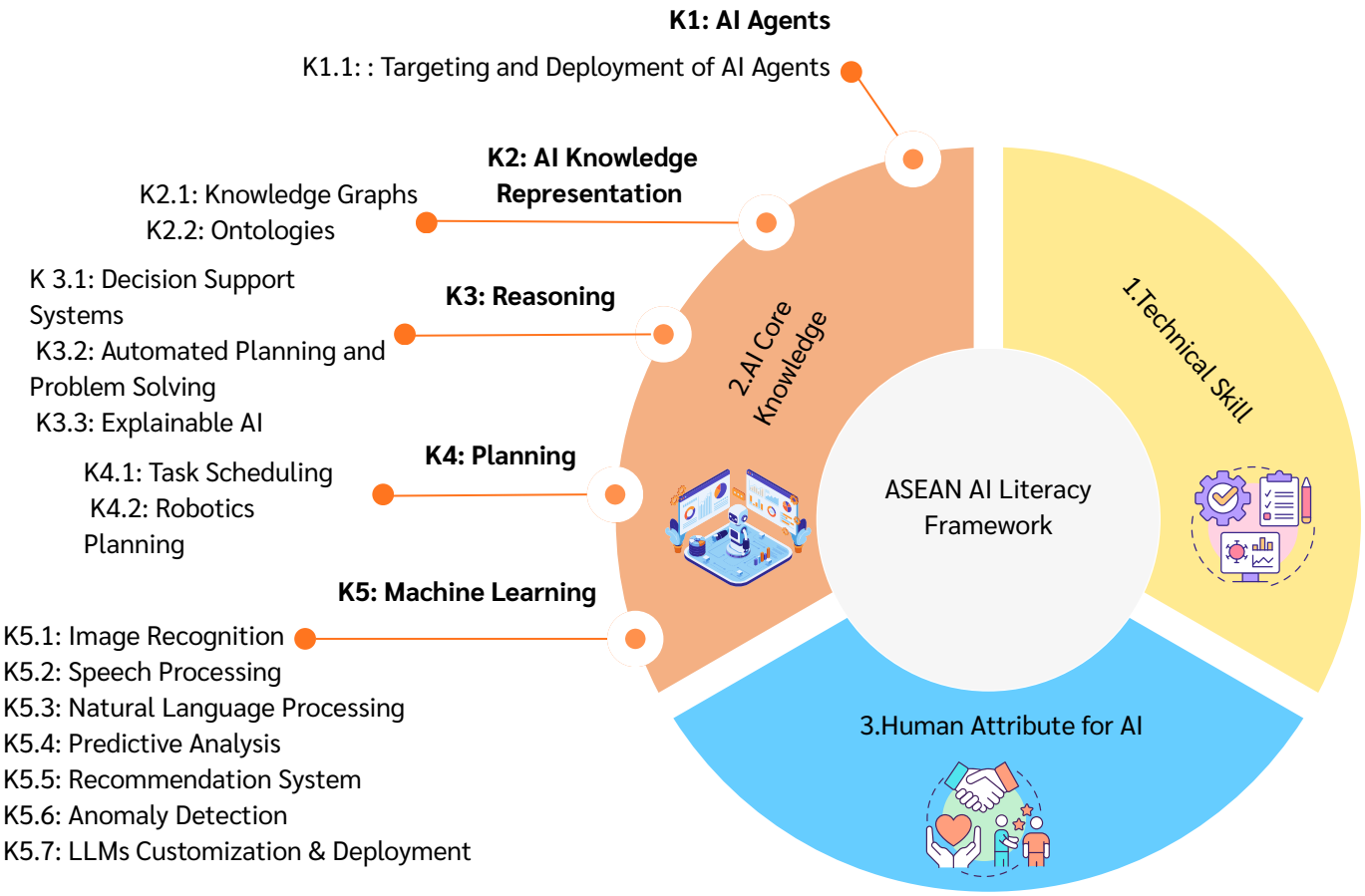
- Prepare basic data such as cleaning data, splitting train/test data according to the specified steps.
- Use ready-made libraries/frameworks to create basic models.
- Train the model using the sample code and verify the correctness of the initial run.
- Evaluate preliminary results against standard metrics such as accuracy, loss.

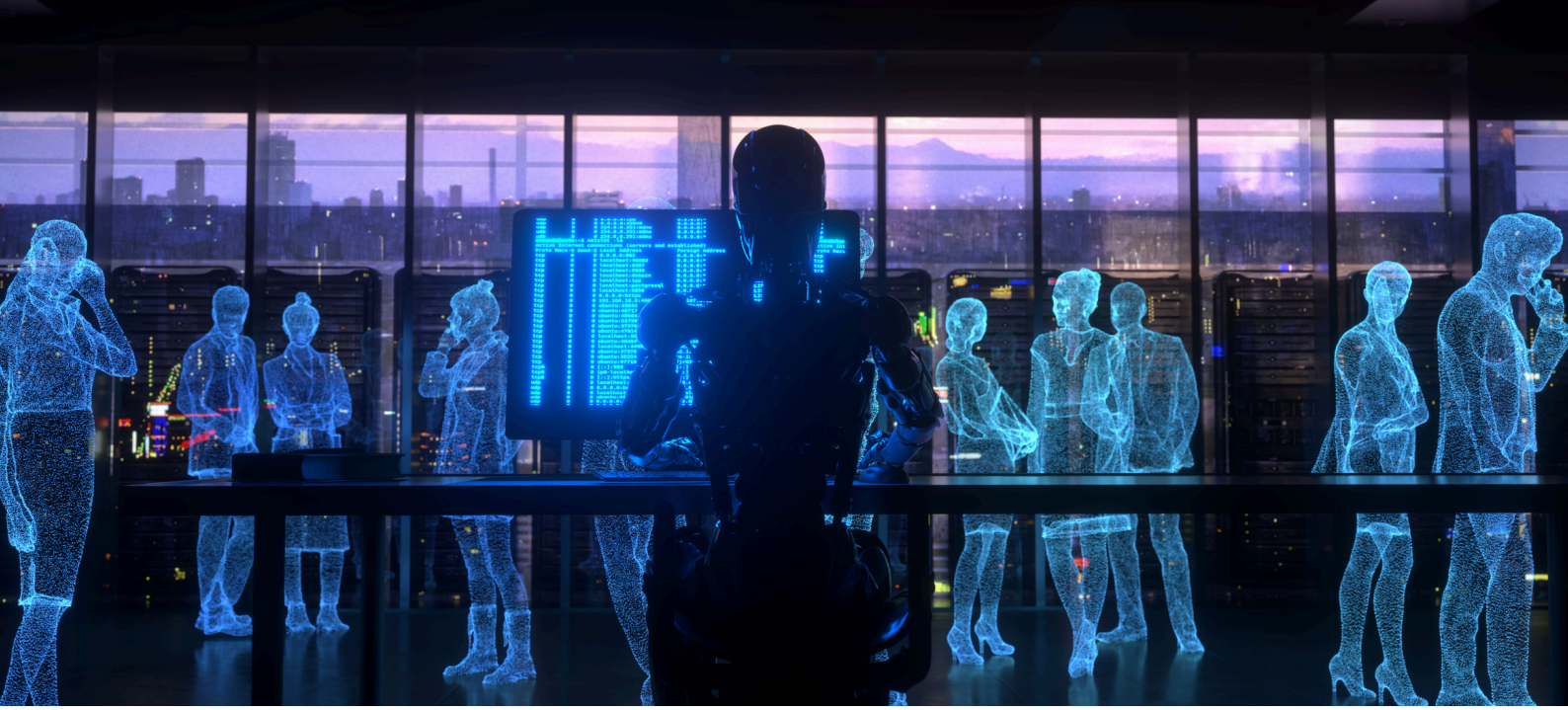
and for S3.3. Data Engineering are:

- Follow the steps outlined to extract data from standard sources (CSV, API, basic database).
- Use ready-made tools to perform basic data conversions.
- Load data into a data warehouse or data lake
- Check the initial data quality such as missing values, duplicate records.
- Work with due regard for information security measures as determined by the organization.

Optional List of Required "AI Core Knowledge"

According to the requirements in this example, beyond the standard set of skills and knowledge defined for each user group, additional competencies in multi-agent systems, reasoning, and planning are also necessary. Consequently, when applying the AILF, individuals—particularly AI developers—can select supplementary modules that align with their needs. In this case, the additional competencies fall under knowledge categories K1, K3, and K4, respectively.





Choose the Required Level
of Additional Competencies

Assume further that for this junior AI developer, the position only requires introductory level of all additional competencies. As a result, the following are list of skills and knowledge required for the basic level of K1, K3 and K4.

In AILF, the following are required skills and knowledge for K1. AI Agents, particularly for K1.1. The developer must be able to:

- explain what an AI Agent is and what it can do.
- set basic conditions (input/output) for the Agent to work properly.
- categorize data in a simple way for agents to use.
- use ready-made agents to achieve simple goals according to specified commands.

In addition, basic skills and knowledge for K3. Reasoning, for K3.1. Decision Support Systems (DSS) is about understand and be able to develop basic reasoning mechanism in Decision Support System (DSS) for management, which are:

- Explain what a DSS is and how it works.
- Understand the results the system provides, such as summary tables, reports, or automated suggestions.
- Use a ready-made DSS system to receive basic information and guidance.

Finally, for the K4., especially for K4.1. Task Scheduling, the required basic skills and knowledge are:

- Explain what task scheduling is and what role AI plays.
- Understand the principles of resource allocation appropriate to the activity.
- Use basic AI systems to create automated work schedules such as job sequencing and assignment.

From the preceding example, it is evident that the design of the AILF enables it to efficiently deliver the required set of AI skills and knowledge for emerging or previously unseen roles and competency needs. Its modular structure also ensures that these skills and knowledge components can be continuously updated as the field evolves.

AI READINESS ASSESSMENT TOOL (AIRAT)

AI READINESS ASSESSMENT

In general, AI Readiness Assessment serves as a systematic approach to measure how much an organization or nation is prepared with regard to responsibly and effectively harnessing AI technologies. In most cases, it analyzes dimensions such as leadership, strategy, talent, data, infrastructure, and governance. All widely recognized by global entities including OECD[10], UNESCO[11], and the World Economic Forum[12] as essential measurement for sustainable AI transformation. In ASEAN, conducting such assessments is increasingly important to support regional competitiveness, reduce capability gaps, and advance collective ambitions under ADM2025 and the forthcoming ADM2030.

Example of well-known AI readiness tools include Cisco AI Readiness Index, IBM's AI Maturity Model, Deloitte's AI Data Readiness (AIDR), Oxford Insights' Government AI Readiness Index, the EU's Assessment List for Trustworthy AI (ALTAI), Singapore's AI Readiness Index (AIRI), and UNESCO's Readiness Assessment Methodology (RAM).

However, from an ASEAN perspective, most of the existing tools do not adequately capture the region's unique conditions — such as multilingual environments, uneven digital infrastructure, varying levels of workforce capability, local language data availability, and the region's strong emphasis on inclusion. This gap highlights the need for an ASEAN-tailored assessment framework that reflects the region's socio-economic diversity and strategic priorities.

Furthermore, global analyses of AI project implementation reveal substantial challenges, with failure rates reportedly exceeding 90%[13]. This data underscores the expert consensus that high-quality business processes are a critical determinant of AI project success. Consequently, a foundational component of any effective AI readiness assessment must be the rigorous requirement for organizations to examine, streamline, and cleanse their existing business processes. This ensures that technical AI capabilities are adequately supported by robust and efficient operational practices.

[10] Global Partnership on Artificial Intelligence (GPAI), and Organisation for Economic Co-operation and Development (OECD). AI for Net Zero: Assessing Readiness for AI. Nov. 2024.
[11] UNESCO. Readiness Assessment Methodology: A Tool of the Recommendation on the Ethics of Artificial Intelligence. United Nations Educational, Scientific and Cultural Organization, 2023.
[12] Kelly Ommundsen. Turning measurement into momentum so agile governance can keep pace with AI. 2025.
[13] Sheryl Estrada. MIT report: 95% of generative AI pilots at companies are failing. 2025

OVERVIEW OF THE AIRAT

Organizational Level Assessment

As with any assessment, clearly defining the scope of evaluation is essential. Doing so ensures that the selected dimensions and questions are both relevant and capable of producing meaningful, actionable insights. In general, AI readiness assessments can be conducted at various levels — country, sector, or organizational. AIRAT is intentionally designed for the organizational level, with its structure, dimensions, and indicators tailored to reflect the practical conditions and requirements of organizations preparing to adopt and operationalize AI technologies.

Assess Overall Organization Using 6 Pillars

In general, existing AI readiness assessment tools each adopt a specific focus—whether evaluating an organization's data preparedness, assessing the maturity of its AI governance, or determining the readiness of its leadership to transition toward AI-driven operations.

In contrast, AIRAT is designed as a comprehensive organizational readiness assessment tool. It is structured around 6 pillars, each representing a critical functional area that collectively reflects an organization's overall capability to adopt and leverage AI effectively.

Rational

The development of AIRAT is guided by two core objectives: ensuring that the assessment reflects ASEAN's values—particularly inclusiveness—and addressing well-known organizational challenges that significantly influence the success rate of AI transformation. Accordingly, three key considerations were integrated into the design of the tool.

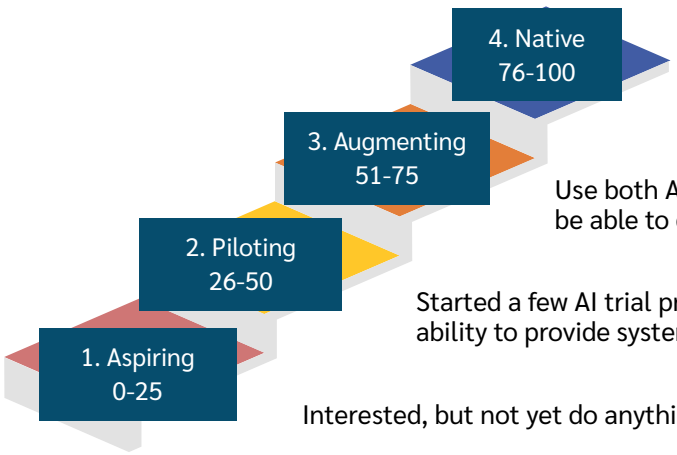
ASEAN's Incusiveness
Heart of ASEAN

Responsible AI
Most concern about AI

Concerns of Management
Business Process Management

LEVELS OF READINESS

In any assessment, results are typically summarized through a score that reflects the subject's overall standing—in this case, the organization's level of AI readiness. AIRAT follows this principle by generating a total readiness score based on responses across all pillars and dimensions. This score is then mapped to one of four readiness levels that describe the organization's current stage in its AI adoption journey:



Be able to develop AI with in-house models including fine-tuning and ontology

Use both AI software packages with customized knowledge and be able to develop small AI modules

Started a few AI trial projects using software packages with ability to provide systems with customized knowledge

Interested, but not yet do anything about AI

PILLARS AND DIMENSIONS

The AIRAT framework is structured around six pillars, each comprising a distinct set of assessment dimensions. In total, the assessment includes 15 dimensions across all pillars. Beyond the dimensions commonly found in existing AI readiness tools, AIRAT introduces two additional groups of dimensions that reflect ASEAN-specific organizational considerations:

1. the degree to which organizations evaluate and refine their internal business processes, and
2. the extent to which they account for infrastructure variability and linguistic diversity when designing and developing AI systems.

The table below presents the pillars and corresponding dimensions/questions used in AIRAT. The number shown in parentheses after each pillar represents its relative **weight** within the overall assessment framework.

Pillars	Dimensions
Leadership Stewardship (25)	• Do we have an approved AI strategy with a named owner? • Do we have a prioritized list of AI use cases, with value and risk tracking? • Do we encourage people to monitor and improve their business processes regularly? • Do we encourage people to think of providing services to those who have infrastructure or access issues?
Value Investment (10)	• Are AI use cases backed by business cases and have clear ROI or public impact?
People (20)	• What is the percentage of employees who passed basic AI training including ethics and safety components? • Which of the following best describes organization's ability to customize, develop, validate, and maintain AI systems? • Do our employees have a culture of finding the most efficient way to get things done? • How much do our people think of those who may have issues with accessing our products and/or services?
Trusted Governance (20)	• Do we have a Responsible AI policy with clear ownership?
Data Quality (15)	• Do we set and monitor data-quality targets (accuracy, completeness, and timeliness)? • Do we have cross-functional teams directly responsible for the organization's data quality?
Reliable Infrastructure (10)	• Are live AI systems monitored with defined responses when they underperform? • Do employees have the necessary hardware and software to perform their jobs effectively? • Do we have a test environment to test whether our services can be provided in areas with accessibility issues?

RECOMMENDATIONS

For each set of responses provided during the assessment, AIRAT not only calculates the total score that determines the organization's overall readiness level, but also generates a concise set of tailored recommendations. These recommendations offer preliminary, high-level guidance to help organizations identify immediate actions that can enhance their AI readiness and inform more strategic planning for longer-term improvement. Inspired by how Singapore's AIRI display its result, the following section presents overall picture of the recommendations used by the tool.

Pillars	Dimensions	"Aspiring" to "Piloting"	"Piloting" to "Augmenting"	"Augmenting" to "Native"
Leadership Stewardship	Do we have an approved AI strategy with a named owner?	Design a small AI plan that translates a specific goal into a few manageable pilot initiatives based on an idea of using software package(s)	Develop a formal AI strategic plan and assign responsible persons based on using both software package(s) and in-house customized software, and Open-Source models	Ensure that the AI strategic plan is regularly revisited due to technologies updated
	Do we keep a prioritized list of AI use cases with value and risk tracked?	Establish a list of 1-2 use cases with value and risks that have to be monitored and managed	Create a centralized repository and multidisciplinary team to evaluate and manage AI use case benefits and risks.	Ensure the AI initiatives team has access to integrated tools for continuous oversight of performance and risk metrics
	Do we encourage people to monitor and improve their business processes regularly?	Initiate business process reviews activities on a few business processes, and conduct the review processes when issues are found	Regularly monitor and review business processes by using a tool(s)	Automate the monitoring and enhancement of business processes to ensure continuous optimization
	Do we encourage people to think of providing services to those who have infrastructure or access issues?	Form a task force to address potential inequality concerns when required	Launch measurable initiatives focused on developing accessible solutions with defined success metrics	Embed accessibility and universal design as foundational elements of all new products and services
Value Investment	Are AI use cases backed by business cases and have clear ROI?	Launch pilot projects to test ROI potential	Adopt a board-level review process linking AI project approval to ROI validation	Integrate AI investments into enterprise budgeting with continuous ROI tracking

People	What is the percentage of employees who received basic AI training?	Establish an incentive program to encourage employees to complete basic AI training.		
	Which of the following best describes organization's ability to customize, develop, validate, and maintain AI systems?	Provide hands-on training for staff to perform light AI customization and knowledge integration	Train staff to build and test small, independent AI modules	Provide comprehensive training for end-to-end AI system design, testing, and maintenance
	Do our people have the culture of finding the most efficient way to complete their tasks?	Roll out practical tools and enable teams to apply them in daily operations	Develop a structured framework for ongoing process improvement with supporting tools	Foster a culture of self-driven improvement supported by AI analytics
	How much do our people think of those who may have issues with accessing our products and/or services?	Initiate small-scale trials to test product accessibility and usability	Make accessibility a mandatory consideration in all development decisions	Integrate accessibility goals into organizational strategy and development frameworks
Trusted Governance	Do we have a Responsible AI policy with clear owners?	Initiate policy formulation using both internal expertise and recognized external references	Implement a structured approval process with clear accountability and reporting roles	Establish a governance structure to monitor adherence to Responsible AI across the lifecycle
Data Quality	Do we set and monitor data-quality targets (accuracy, completeness, and timeliness)?	Initiate ad hoc evaluations of essential data sources for reliability	Establish a formal process for monitoring key data sets with scheduled reporting	Deploy real-time tools to track and manage data quality across all systems
	Do we have cross-functional teams directly responsible for the organization's data quality?	Appoint team members to review and manage data quality for specific projects	Establish a cross-functional committee to define and oversee data quality standards	Form a dedicated team responsible for maintaining enterprise-level data integrity and reliability

Reliable Infrastructure	Are live AI systems monitored with defined responses when they underperform?	Assign staff to collect and review pilot performance data manually	Establish automated oversight with built-in alerts and response workflows for model performance	Adopt a fully automated MLOps framework for model tracking, retraining, and deploymen
	Do employees have the necessary hardware and software to perform their jobs effectively?	Provide selected teams with access to modern tools for pilot implementation	Implement a policy to ensure all employees receive timely technology upgrades and secure access to scalable cloud/compute resources	Establish a dynamic resource management platform with predictive provisioning capabilities
	Do we have a test environment to test whether our services can be provided in areas with accessibility issues?	Conduct preliminary testing of selected services under restricted conditions	Establish formal test environments to evaluate accessibility under limited connectivity	Implement continuous testing for accessibility across multiple network conditions in product development process

AI LITERACY ONLINE LESSON AND ASSESSMENT

RESPONSIBLE AI

As a result of the AILF that has been developed in this project, this Responsible AI course brings together experts from technology, cybersecurity, law, academia, and international organizations. The goal is to offer a practical and comprehensive understanding of how AI affects daily life, work, and the future. The five modules guide participants through the fundamentals and risks of AI. They also show how AI shapes everyday decisions and digital behavior. Learners will practice essential skills for safe and effective AI use. The session also explains how enterprises scale AI responsibly through governance and collaboration. Finally, it looks ahead to the future of Human + AI teamwork. This course prepares students, educators, professionals, and leaders to become responsible AI citizens. Everyone will gain the skills to use AI wisely, ethically, and confidently in an increasingly intelligent world.

This Responsible AI course brings together leading experts from technology, cybersecurity, law, academia, and global organizations. The program offers a clear and practical view of how AI shapes our daily decisions, our work, and the future of society. The five modules explore AI fundamentals, digital responsibility, hands-on safe AI practices, enterprise-level governance, and emerging Human + AI collaboration models. Each module includes a quiz to deepen understanding, and the final exam evaluates readiness across three levels: Responsible AI Citizen, Responsible AI Builder, and Responsible AI Enterprise Leader. By the end of the course, participants will gain the skills and mindset to engage with AI thoughtfully, ethically, and with confidence.

INSTRUCTORS WITH REAL-WORLD EXPERIENCES IN APPLYING RESPONSIBLE AI

TOPICS

Module 1 – Understanding Responsible AI: Fundamentals, Risks, and Impacts

This module builds foundational understanding of what AI is, how it works, and why human responsibility matters as AI becomes more powerful. Learners explore global principles, real risks, and the role of humans in guiding AI toward safe and beneficial use.

Module 2 – AI in Everyday Life: Awareness and Responsibility

This module shows how AI is already embedded in daily activities—search, translation, recommendations—and why awareness of data, consent, and privacy is essential. Learners develop responsible digital habits by understanding mistakes, risks, and future trends like AI agents and AI guardians.

Module 3 – Practicing Responsible AI: Everyday Skills for Tomorrow

This module gives hands-on skills for using AI safely through the cycle of Think → Prompt → Check. Learners practice responsible prompting, verification, and the 3C skills—Critical Thinking, Curiosity, Continuous Learning—to become responsible AI citizens.

Module 4 – Enterprise AI at Scale: Good Governance and Social Impact

This module explains how organizations scale AI safely through governance, transparency, security, and collaboration. Learners see real enterprise practices and understand how responsible AI drives trust, inclusion, and long-term societal impact.

Module 5 – Human + AI: The Future of Responsible Collaboration

This module explores the new era of human–AI collaboration and the skills needed to work effectively with increasingly capable AI systems. Learners discover how to combine human judgment with AI assistance to build a safe, inclusive, and sustainable AI future.

APPENDIX

AI Core Knowledge

5 main skills and 14 sub-skills

Area: AI Core Knowledge	
Core skills **K1: AI Agents**	Definition Design and develop systems that enable agents to perceive the environment, make decisions, and act automatically to achieve specified goals.
Sub-skills **K1.1: Targeting and Deployment of AI Agents**	Definition Use, design, development to set goals with conditions from users/to produce final results that achieve goals that are useful to users, manage commands/conditions, link with data, analyze/categorize data and adjust usage.
Level	**Definition**
Basics **(1)**	Understand and Use - Explain what an AI Agent is and what it can do. - Set basic conditions (input/output) for the Agent to work properly. - Categorize data in a simple way for agents to use. - Use ready-made agents to achieve simple goals according to specified commands.
Intermediate **(2)**	Analysis and Evaluate - Analyze the relationship between commands, conditions, and data used by the Agent. - Evaluate the Agent 's performance to determine whether it can achieve its goals as planned. - Identify the strengths and limitations of the agent in solving problems according to the situation. - Customize the functionality, such as modifying conditions or adjusting the data structure to make the agent work more accurately. - Use Agents for multi-factor problems that require more complex commands.
Advanced **(3)**	Design and Create - Design new agent workflows with complex, multi-dimensional conditions. - Agent deployment model that can learn from data and adapt to goals. - Connect multiple agents to work together (Multi-Agent System) - Create new innovations by using agents to address specific issues such as education, business, health , or society.

Area: AI Core Knowledge	
Core skills **K2: AI Knowledge Representation**	Definition The process and method of storing human knowledge in an AI system that can be understood and processed.
Sub-skills **K2.1: Knowledge graphs (Design and develop knowledge graphs)**	Definition Managing, verifying, and linking data structures and relationships.
Level	**Definition**
Basics **(1)**	Understand and Use - Explain what a knowledge graph is and what it is used for. - Use ready-made knowledge graphs to search/browse information. - Organize data into a basic nodes –edges format. - Identify data attributes to link to existing structures.
Intermediate **(2)**	Analysis and Evaluate - Analyze the connections between data in a knowledge graph. - Verify the quality, accuracy and consistency of data. - Categorize/order data appropriately for use.
Advanced **(3)**	Design and Create - Design new knowledge graphs for use in specific contexts. - Connect data from multiple sources to create new knowledge structures, developing approaches or models that make knowledge graphs innovative. - Create reusable knowledge graphs and expand them into more complex knowledge systems . - Apply AI/NLP to automatically create or update relationships in knowledge graphs .

Area: AI Core Knowledge	
Core skills **K2: AI Knowledge Representation**	Definition The process and method of storing human knowledge in an AI system that can be understood and processed.
Sub-skills **K2.2: Ontologies (Ontologies Management and Development)**	Definition Use, design, and development of AI knowledge by clearly defining its characteristics and relationships to form a system, hierarchy, or network that can be reused or a central knowledge base accessible to multiple AI systems.
Level	**Definition**
Basics **(1)**	Understand and Use - Explain the importance and usage characteristics of ontology. - Connect simple attributes or relationships in the ontology structure. - Use existing ontologies to interpret/manage data.
Intermediate **(2)**	Analysis and Evaluate - Analyze the correctness and completeness of the ontology structure. - Evaluate the relationships, hierarchies, or connections in knowledge networks. - Check whether the ontology supports reusability and cross-system access. - Improve or extend relationships in the ontology to suit more complex tasks.
Advanced **(3)**	Design and Create - Design new ontology for use in specific contexts such as education, business, health, social, etc. - Develop an ontology as a central knowledge base that supports multiple AI systems. - Create reusable ontologies and scale them into large knowledge networks .

Area: AI Core Knowledge	
Core skills **K3: Reasoning**	Definition A process that uses AI to analyze and synthesize new results in a rational manner for use in decision-making, problem-solving, or predicting future events.
Sub-skills **K 3.1: Decision Support Systems (DSS)**	Definition AI-powered systems management to collect data, analyze it, generate options, evaluate outcomes, and provide recommendations to enable users to make efficient and accurate decisions.
Level	**Definition**
Basics **(1)**	Understand and Use - Explain what a DSS is and how it works. - Understand the results the system provides, such as summary tables, reports, or automated suggestions . - Use a ready-made DSS system to receive basic information and guidance.
Intermediate **(2)**	Analysis and Evaluate - Analyze the data and options generated by the DSS. - Evaluate the accuracy, reliability, and appropriateness of recommendations from the system. - DSS results with other data/evidence to inform decision-making.
Advanced **(3)**	Design and Create - Design or customize DSS to support more complex data and problems. - Develop strategies for using DSS to support organizational or business decision-making. - Create a DSS system that can learn and adapt from new data to increase accuracy and value.

Area: AI Core Knowledge	
Core skills **K3: Reasoning**	Definition A process that uses AI to analyze and synthesize new results in a rational manner for use in decision-making, problem-solving, or predicting future events.
Sub-skills **K3.2: Automated Planning and Problem Solving**	Definition Planning using AI tools to solve problems in work, analysis and evaluation of usage, including design and development.
Level	**Definition**
Basics **(1)**	Understand and Use - Explain the importance and benefits of Automated planning and problem solving for work - Understand how AI offers solutions - AI tools to create basic plans such as scheduling and sequencing.
Intermediate **(2)**	Analysis and Evaluate - AI -generated options to see what their advantages and limitations are. - Evaluate the suitability and effectiveness of the system-generated plans . - Adjust planning conditions and criteria to increase accuracy and efficiency. - Check the consistency of the plan with the goals or actual situation.
Advanced **(3)**	Design and Create - automated planning applications to solve complex or multidimensional problems. - Develop new models/tools that use AI to plan and solve specific problems. - Create innovative work/project management using AI to create new value. - Design complex problem-solving plans by combining planning with systematic evaluation.

Area: AI Core Knowledge	
Core skills **K3: Reasoning**	Definition A process that uses AI to analyze and synthesize new results in a rational manner for use in decision-making, problem-solving, or predicting future events.
Sub-skills **K3.3: Explainable AI (XAI)**	Definition Using , evaluating, and communicating AI performance that can bridge technical models with human decision-making to foster trust, accountability, transparency , and ethical use .
Level	**Definition**
Basics **(1)**	Understand and Use - XAI can be explained as making AI results transparent and understandable. - Understand the basic relationship between AI models and human decision-making. - Use the ready-made XAI system to view the result explanation, such as highlights. Important feature : probability of outcome
Intermediate **(2)**	Analysis and Evaluate - Analyze the pros and cons of AI description methods (e.g. LIME, SHAP, feature importance). - Evaluate the clarity, accuracy, and usefulness of the explanations provided by XAI. - AI explanations influence user confidence and decision-making.
Advanced **(3)**	Design and Create - Design or improve the system to have more understandable and transparent XAI features. - Communicate AI results to users/stakeholders who do not have a technical background. - Develop new approaches to link technical models with human decision-making to promote ethical and responsible use of AI.

Area: AI Core Knowledge	
Core skills **K 4: Planning**	Definition Planning and designing AI systems should be forward-thinking, sequential, and adaptive to resource and environmental constraints.
Sub-skills **K4.1: Task Scheduling**	Definition Use of AI- based systems assessment in scheduling and resource allocation to improve efficiency and operational flexibility.
Level	**Definition**
Basics **(1)**	Understand and Use - Explain what task scheduling is and what role AI plays. - Understand the principles of resource allocation appropriate to the activity. - Use basic AI systems to create automated work schedules such as job sequencing and assignment.
Intermediate **(2)**	Analysis and Evaluate - AI -generated work schedules and resource allocations to determine their pros and cons. - Evaluate the performance of AI systems in scheduling, such as flexibility. Time saved and resource use - Adjust the conditions/criteria to make the system create a more appropriate table.
Advanced **(3)**	Design and Create - Design an AI strategy for task scheduling in complex tasks such as large projects or logistics systems . - Develop new models or solutions that can flexibly and efficiently schedule tasks and resources. - Create a scheduling system that can learn and adapt to changing environments and working conditions.

Area: AI Core Knowledge	
Core skills **K 4: Planning**	Definition Planning and designing AI systems should be forward-thinking, sequential, and adaptive to resource and environmental constraints.
Sub-skills **K4.2: Robotics Planning**	Definition AI deployments, define robot routes, workflows, and resource management, and analyze and refine planning models to meet complex scenarios.
Level	**Definition**
Basics **(1)**	Understand and Use - Explain what robotics planning is and why it is important. - Understand the sequencing of robot tasks in a mission - Follow the path planning steps generated by the AI system . - Use existing tools/software to create basic robot motion paths.
Intermediate **(2)**	Analysis and Evaluate - Analyze the path and sequence of work chosen by the robot to determine its advantages and disadvantages. - Evaluate the efficiency of resource use, such as time, energy, or routes taken. - Customize planning conditions such as barriers, safety, or work restrictions. - Check the suitability of the planning model as the situation changes. - Choose the right planning strategy for your mission or more complex tasks.
Advanced **(3)**	Design and Create - Design models that can handle complex or changing environments. - Develop a robotics planning system that learns and adapts (Adaptive/intelligent planning) - Create multi -robot planning to work together efficiently. - Apply deep AI such as Reinforcement Learning to improve planning efficiency. - It presents innovative approaches that enable robots to make decisions and adapt more closely to humans.

Area: AI Core Knowledge	
Core skills **K5: Machine Learning**	Definition Using, designing and developing algorithms to analyze and predict outcomes to aid in decision making and create value in work.
Sub-skills **K 5.1: Image Recognition**	Definition AI image recognition and classification tools to analyze, distinguish, detect, or predict what appears in images to support work, research, and decision-making.
Level	**Definition**
Basics **(1)**	Understand and Use - Explain what image recognition is and its role. - Understand the scope and limitations of using image recognition. - , such as labels or object detection . - Use basic AI tools to classify or detect objects in images.
Intermediate **(2)**	Analysis and Evaluate - AI -generated image classification results to determine their accuracy and precision. - Compare detection results from multiple models or methods to evaluate errors such as false positives/false negatives generated by image classification. - Customize system parameters or conditions to increase the accuracy of image analysis. - Use image recognition to support decision making , ensuring appropriateness and reliability, such as product quality assessment or research data analysis .
Advanced **(3)**	Design and Create - Design new image recognition models tailored to specific problems, such as medicine, industry, or education. - Develop an image recognition system that can detect and predict things that are more complex than the basic level. - Image Recognition functionality with larger systems such as DSS or robotics planning. - Apply image recognition to research or innovations that require high accuracy.

Area: AI Core Knowledge	
Core skills **K5: Machine Learning (Learning from data for prediction)**	Definition Using, designing and developing algorithms to analyze and predict outcomes to aid in decision making and create value in work.
K5.2: Speech Processing	Definition Understanding principles and technology of converting speech into digital data, synthesize and interact using voice, validate reliability, and impact of speech processing systems in different contexts. Improve the model and develop new applications to improve efficiency and suitability of the systems.
Level	**Definition**
Basics **(1)**	Understanding and Use - Explain how speech-to-text and text-to-speech systems work. - Identify the basic differences between speech, speech synthesis, and speaker recognition . - Use AI tools to transcribe short meetings or voice messages. - Use voice assistant and understand the results. - Be aware of basic limitations, such as mistranslations from accents or noise environments. - Explain the ethical and privacy implications that may arise from recording/using voice.
Intermediate **(2)**	Analyze and Evaluate - Analyze the causes of errors from speech-to-text results (e.g. unclear sound, accent, or noise) - Compare the accuracy of speech recognition AI tools from multiple platforms. - Evaluate the accuracy and reliability of the results obtained from AI systems. - Test model limitations, such as handling jargon or working with multiple languages.
Advanced **(3)**	Design and Create - Design a workflow that integrates speech processing to reduce steps in real work. - Develop speech recognition models that support multiple languages or specialized terms . - Improve the text-to-speech system to have clearer and more natural sound quality . - Improving models and developing new applications to increase efficiency and suitability for use in work, and facilitating vulnerable groups, such as assistance systems for the hearing or visually impaired. - Establish measures related to the use of speech to ensure transparency, fairness, and responsible use.

Area: AI Core Knowledge	
Core skills **K5: Machine Learning**	Definition Using, designing and developing algorithms to analyze and predict outcomes to aid in decision making and create value in work.
Sub-skills **K 5.3: Natural Language Processing (NLP)**	Definition Understanding the principles of NLP , using tools to analyze and create language, and evaluating the results. and develop or apply NLP to enable machines to understand, interpret, analyze and create human language.
Level	**Definition**
Basics **(1)**	Understand and Use - Explains the meaning, importance and components of NLP. - NLP results such as keywords and text classification . - NLP tools , such as text analysis programs or automatic translation systems.
Intermediate **(2)**	Analysis and Evaluate - Analyze the accuracy and appropriateness of the results from the NL system. - Evaluate the limitations or weaknesses of the tool, such as misinterpretation or linguistic bias . - appropriate NLP application for the job. - Compare multiple NLP tools to choose the most effective one for the job.
Advanced **(3)**	Design and Create - Design new models or methods using NLP to solve specific language problems. - Develop/improve NLP systems to be able to interpret and create human language accurately and naturally. - Apply NLP to complex tasks such as intelligent chatbots. Learning recommendation system Automatic text summarization - NLP innovations that add new value, such as cross-lingual communication systems or digital assistants that understand deep context.

Area: AI Core Knowledge	
Core skills **K5: Machine Learning**	Definition Using, designing and developing algorithms to analyze and predict outcomes to aid in decision making and create value in work.
Sub-skills **K5.4: Predictive Analysis**	Definition Understanding, using, evaluating and developing predictive models using historical and current data to predict future events or outcomes and support strategic decision making.
Level	**Definition**
Basics **(1)**	Understand and Use - Explain the meaning, importance and benefits of predictive analysis - Understand the limitations of forecasting, such as incomplete or biased data. - Use basic tools or software to build predictive models . - Interpret preliminary results from forecasts such as trends, sales, risks , etc.
Intermediate **(2)**	Analysis and Evaluate - Analyze the accuracy and reliability of predictive models using real data. - Evaluate the quality of the data used to build the model, such as completeness, accuracy, and statistical relationships. - Compare multiple predictive analytics methods to choose the most appropriate one. - Examine the limitations and risks of using predictions to make decisions based on specific situations and goals.
Advanced **(3)**	Design and Create - Design new predictive models that are appropriate for specific problems or contexts, such as business, education, society, and health. - Develop models that can use both historical and current data to create more accurate predictions. Apply predictive analysis to support strategic decision making in complex situations. - Innovate in using predictive analysis to create new value, such as predicting consumer behavior or predicting future risks.

Area: AI Core Knowledge	
Core skills **K5: Machine Learning**	Definition Using, designing and developing algorithms to analyze and predict outcomes to aid in decision making and create value in work.
Sub-skills **K 5.5: Recommendation System**	Definition Understanding, designing, evaluating, and developing AI-driven recommendations that analyze user data and behavior to provide practical and relevant recommendations that meet user needs, interests, or goals.
Level	**Definition**
Basics **(1)**	Understand and Use - Explain the meaning, importance, and role of Recommendations in daily life/work. - Understand how the recommended results are linked to user data. - Use existing recommendation systems, such as movie, product, or recommendation systems. Course etc.
Intermediate **(2)**	Analysis and Evaluate - Relationship analysis and the consistency of use between user data and what the system recommends - Evaluate the accuracy, relevance, and value of the system's recommendations. - Check for system limitations such as bias , redundancy, or mismatched recommendations. - Compare different recommendation methods (collaborative filtering, content-based, hybrid) to find the most suitable for use.
Advanced **(3)**	Design and Create - Design a new recommendation system that meets the specific needs of users or organizations. - Develop a recommendation system model that incorporates multidimensional data such as contextual interests, learning goals, or social information. - Create innovative recommendations that meet real-world needs, such as personalized learning systems or decision support systems.

Area: AI Core Knowledge	
Core skills **K5: Machine Learning**	Definition Using, designing and developing algorithms to analyze and predict outcomes to aid in decision making and create value in work.
Sub-skills **K5.6: Anomaly Detection**	Definition Understanding, using, evaluating, and developing AI for detecting data anomalies to mitigate risk, prevent issues, and support proactive decision-making.
Level	**Definition**
Basics **(1)**	Understand and Use - Explain the principles, importance and benefits of Anomaly detection - Be aware of the risks and impacts associated with abnormal data. - Understand the results of detections, such as whether data is classified as “normal” or “abnormal.” - Use existing tools or systems to detect anomalies in the preliminary data.
Intermediate **(2)**	Analysis and Evaluate - Analyze data patterns and identify the types of anomalies detected. - Evaluate the model's accuracy and performance, such as false positives and false negatives. - Examine the limitations of the methods used, such as their sensitivity to noise or data imbalance. - Compare detection results from multiple methods to select the most appropriate one.
Advanced **(3)**	Design and Create - anomaly detection models for specific contexts, such as finance, healthcare, or cybersecurity. - Develop models that can learn and adapt to changing data (adaptive models) - Apply anomaly detection to support proactive decision-making and early problem prevention. - Create new innovations in anomaly detection, such as using deep learning or hybrid approaches.

Area: AI Core Knowledge	
Core skills **K5: Machine Learning**	Definition Using, designing and developing algorithms to analyze and predict outcomes to aid in decision making and create value in work.
Sub-skills **K5.7: LLMs Customization & Deployment**	Definition Configuring and adapting LLMs for specific domains and deploying them responsibly
Level	**Definition**
Basics **(1)**	Understand and Use - Explain customization options, system instructions, prompts, approved references, settings. - Use basic configuration concepts, temperature, max tokens, and understand tradeoffs. - Follow data handling rules, don't paste sensitive data, and use approved sources.
Intermediate **(2)**	Analysis and Evaluate - Prepare domain data and guidelines for customization, taxonomy, glossary, examples, do/don't rules. - Evaluate whether fine-tuning is necessary versus prompting/RAG. - Set up operational practices: access control, usage limits, feedback loops.
Advanced **(3)**	Design and Create - Design domain-adapted solutions, fine-tuning or adapters where appropriate, with governance. - Establish MLOps practices, monitoring, drift checks, regression tests, rollout plans. - Ensure compliance-by-design, privacy, security, auditability, documentation.

Human Attribute for AI

3 main skills and 8 sub-skills

Area: Human Attribute for AI	
Core skills **A1: Human–AI Interaction and Communication**	Definition Efficient and friendly collaboration between humans and AI
Sub-skills **A1.1 Emotional Intelligence**	Definition Self-awareness and control, and understanding and empathy for others, are essential for effective and human-friendly use, design, and development of human-AI collaboration .
Level	**Definition**
Basics **(1)**	Perception and Response - Recognize and accept that emotions affect working with others and the team. - Show positive reactions to work results . AI Join with others and your team - Be open to the opinions and feelings of others in your AI- enabled team .
Intermediate **(2)**	Valuing and Organizing - Empathy and understanding when working with AI and the team. - Value the balance between “human” and “ AI” in your work, without bias towards one side or the other. - Change your thinking patterns, be optimistic, have self-confidence, see opportunities and learn. AI - Lead yourself to overcome crises successfully
Advanced **(3)**	Character Building and Integration - Use emotional intelligence as a permanent characteristic to work humanely with AI. - Create a work environment that fosters trust, cooperation, and camaraderie between humans and AI. - Develop a new approach that integrates emotional intelligence With the design/use of AI to solve complex problems - Serve as a role model in using emotional intelligence to reduce conflict and promote positive decision-making in AI- enabled teams.

Area: Human Attribute for AI	
Core skills **A1: Human–AI Interaction and Communication**	Definition Efficient and friendly collaboration between humans and AI
Sub-skills **A1.2: Effective Communication with AI Support**	Definition Awareness and appreciation of the use of AI as a tool to support effective communication, including communicating information, messages, or knowledge from AI to users/stakeholders in a format that is easy to understand, clear, transparent, and appropriate to the context.
Level	**Definition**
Basics **(1)**	Perception and Response - Recognize the role of AI in helping communicate information and messages. - See the value of AI in helping increase understanding and transparency in communication . - Use basic AI to communicate, such as translating languages, summarizing text, or creating descriptions. - Show positive responses to the use of AI in communication, such as acceptance and trial.
Intermediate **(2)**	Valuing and Organizing - Compile events, stories, and AI communication issues. - Plan a solution to the problem by communicating appropriately to the situation and time frame. - Organize two-way communication methods using AI to deliver content that is relevant to the target audience. - Integrate AI with your communication skills to become more effective. - Evaluate the appropriateness and develop the use of AI in communication according to context and situation.
Advanced **(3)**	Character Building and Integration - Continue to use AI to support communication that is intuitive, transparent, and user-friendly. - AI-infused communication approaches to foster trust and collaboration in organizations/societies. - Be a good example of using AI to communicate ethically and responsibly. - Develop and disseminate new approaches to using AI to improve communication standards.

Area: Human Attribute for AI	
Core skills **A1: Human–AI Interaction and Communication**	Definition Efficient and friendly collaboration between humans and AI
Sub-skills **A1.3: Collaboration and Teamwork**	Definition Awareness and appreciation of the use of AI as a tool for collaborative work between humans and AI through clear communication, role sharing, collaborative problem solving, and building trust.
Level	**Definition**
Basics **(1)**	Perception and Response - Recognizing the value of AI as a "team assistant" - Accepting the contribution of AI to the division of labor or supporting communication - Demonstrate a response to the use of AI to support initial problem solving with other people/ teams
Intermediate **(2)**	Valuing and Organizing - See the value of using AI to share roles and support teamwork. - AI-enabled methods that foster collaboration and clear communication. - Use AI to help align team roles, responsibilities, and data. - Promote an atmosphere of trust between teams and interactions. AI in the workforce
Advanced **(3)**	Character Building and Integration - Resolve AI weaknesses, and continue to evolve to use AI to foster transparent, sustainable, and effective collaboration within teams. - Design a work approach or culture that integrates AI to create dynamic and innovative teams. - Be a role model in using AI to foster trust, accountability, and team unity. - Develop new models of "human-AI collaboration " that can be reused and disseminated at the enterprise/community level.

Area: Human Attribute for AI	
Core skills **A2: Ethics, Responsibility and Resilience**	Definition Adherence to ethical principles, responsibility for the impacts of AI use , and the ability to recover from challenges or failures in working with AI.
Sub-skills **A2.1: Ethics and Integrity**	Definition Awareness of ethical issues related to the use of AI , including accuracy, transparency, and honest decision-making, particularly the use, design, or development of AI to benefit individuals, organizations, and society without creating inequality or violating rights.
Level	**Definition**
Basics **(1)**	Perception and Response - Recognize that the use of AI may have impacts on rights, privacy, and inequality. - Accept and respect basic ethical principles such as honesty and transparency. - AI use, such as troubleshoot the AI hallucination before use.
Intermediate **(2)**	Valuing and Organizing - Value transparency and honesty in AI use/design/development. - Assess the ethical impact of using AI in your work or organization. - Comply with regulations and standards related to AI and rights protection. - Promote the fair use of AI that does not create discrimination or inequality.
Advanced **(3)**	Character Building and Integration - Use AI and continuously develop it , adhering to accuracy, transparency, and honesty. - Design/develop AI that adheres to the principles of fairness and takes into account the rights of stakeholders. - Be a leader or role model in promoting the ethical use of AI in your team/organization. - Develop and disseminate new guidelines/policies to establish standards for the socially responsible use of AI.

Area: Human Attribute for AI	
Core skills **A2: Ethics, Responsibility and Resilience**	Definition Adherence to ethical principles, responsibility for the impacts of AI use , and the ability to recover from challenges or failures in working with AI.
Sub-skills **A2.2: Resilience/Grit**	Definition Perseverance, determination, and the ability to recover from obstacles, failures, or changes; continuous learning and adaptation, especially in contexts where working or learning with AI and rapidly changing digital technologies is required .
Level	**Definition**
Basics **(1)**	Perception and Response - Recognize that failure and change are part of learning/working in the AI era . - Show a positive response even when faced with obstacles, such as trying to find a solution. - Accept the role of AI/ fast-changing technology and be ready to continuously experiment and adapt.
Intermediate **(2)**	Valuing and Organizing - Stick to your long-term goals, even in the face of technological failures or changes. - Use AI or digital tools to help adapt and find solutions. - Demonstrate persistent and persistent behavior by finding new alternatives or new methods. - Create a learning system AI from mistakes to improve yourself and your team
Advanced **(3)**	Character Building and Integration - Use perseverance and resilience as a key characteristic when working with AI/ new technologies. - Be a good example of facing failure with a constructive and determined attitude. - Develop proactive strategies to manage digital technology transformation. - Create a culture of learning from failure and sustainable adaptation in your team/organization .

Area: Human Attribute for AI	
Core skills **A2: Ethics, Responsibility and Resilience**	Definition Adherence to ethical principles, responsibility for the impacts of AI use , and the ability to recover from challenges or failures in working with AI.
Sub-skills **A2.3: Leadership and Governance**	Definition Leadership roles are to guide, make decisions, and manage AI in a transparent, fair, and accountable manner for the public good.
Level	**Definition**
Basics **(1)**	Perception and Response - Recognize the importance of transparency and fairness in the use/management of AI - Accept the leadership role and use AI with consideration for the public interest. - Demonstrate positive responsive behavior towards governance in AI decision-making processes.
Intermediate **(2)**	Valuing and Organizing - Value transparency, fairness, and participation in AI governance. - AI management methods that take into account the interests of all parties. - Governance principles in decision-making, working with AI, such as accountability and fairness. - Organize work and involve stakeholders in setting the direction and policy of AI in the organization.
Advanced **(3)**	Character Building and Integration - Stick to your decision and leading the team with consideration for the public interest at all times - Develop transparent, fair, and accountable AI policy or regulatory framework. - Be an example of using ethical leadership , understanding human emotions and feelings that AI does not have, in managing AI. - Develop AI governance principles as standards and creates trust in society.

Area: Human Attribute for AI	
Core skills **A3: Learning and Development for Inclusiveness**	Definition Committed to lifelong learning and development in AI skills development, while ensuring inclusion is equitable and accessible for all, without discrimination and respecting diversity of languages, cultures and social contexts.
Sub-skills **A 3.1: Lifelong Learning**	Definition Having a curious attitude, a growth mindset, a desire to develop and a readiness to continuously learn about AI and new technologies in order to adapt to technological and social changes.
Level	**Definition**
Basics **(1)**	Perception and Response - Recognize that knowledge and skills in AI/ technology are constantly changing. - Express interest in participating in activities or using new learning resources. - Respond positively to learning opportunities, such as experimenting with new AI tools.
Intermediate **(2)**	Valuing and Organizing - See the value of learning AI and new technologies for career development and adaptability. - Develop short/long term learning plans that are linked to personal and work goals. - Regularly use digital learning resources or AI platforms to enhance your knowledge. - Organize learning to create a balance between personal, team, and social learning.
Advanced **(3)**	Character Building and Integration - Consistently demonstrate a lifelong learner with a growth mindset . - Be a role model in learning and transferring knowledge of AI/ new technologies to others. - Develop a culture of continuous learning in the team/organization as a standard. - Integrate AI learning and new technologies with long-term social, economic, and career adaptation.

Area: Human Attribute for AI	
Core skills **A3: Learning and Development for Inclusiveness**	Definition Committed to lifelong learning and development in AI skills development, while ensuring inclusion is equitable and accessible for all, without discrimination and respecting diversity of languages, cultures and social contexts.
Sub-skills **A 3.2 : Inclusiveness**	Definition Creating equality, accessibility and acceptance of diversity when using, designing or developing AI , whether in terms of language, culture, physical, social or economic abilities .
Level	**Definition**
Basics **(1)**	Perception and Response - Recognize that AI may reflect or amplify inequalities in access to AI, language, and culture. If not designed carefully - Be open to different perspectives regarding language, culture, or physical limitations in order to find solutions . - Respond positively to the use of AI to provide equal access to information or services.
Intermediate **(2)**	Valuing and Organizing - See the value of designing/using AI that is inclusive of multiple languages, cultures, and social groups. - Evaluate the suitability of AI for use by users with disabilities or disadvantages. - Organize the use of AI to support equality, such as increasing communication options or universal access. - Use AI to help reduce economic and social barriers to accessing knowledge and services.
Advanced **(3)**	Character Building and Integration - Use convenient and accessible AI to promote social equality and diversity. - Design or develop AI that is user-friendly and accessible to all users, especially vulnerable groups. - Be a role model in promoting the use of AI that creates equal value for everyone. - Develop AI guidelines and policies that integrate inclusiveness as organizational/societal standards.

Technical Skills

4 main skills and 18 sub-skills

Area: Technical Skill	
Core skills **S1: Utilize AI**	Definition Hands-on skills that enable individuals to use AI tools and systems in their daily lives appropriately, efficiently, and in line with their own needs.
Sub-skills **S1.1: Accessing AI Tools and Basic Use of AI Applications**	Definition Enabling , installing, registering, logging in, and enabling basic AI functions in daily life.
Level	**Definition**
Basics **(1)**	Guided Practice and Manipulation - Enable or install AI apps according to the manual/video tutorial. - Successfully applied and logged in according to the specified steps. - Enable basic AI functions as per the manual and instructions, such as typing a message to ask the chatbot a question. Translation Or a summary of the message
Intermediate **(2)**	Flexible and Precise Execution - Access and set up AI Tools correctly and quickly. - Use basic AI functions to support your daily life, such as automatically creating documents, searching for information, or helping with communication. - Fixed minor access and usability issues, such as resetting passwords or troubleshooting connectivity issues.
Advanced **(3)**	Naturalization and Integration - Use AI applications automatically and confidently without relying on manuals. - Integrate AI tools into your daily routines, such as working, learning, or communicating. - Utilize AI systems in offline or low-bandwidth environments - Customize or choose AI functions to suit your needs and context. - Help guide others through basic access and use of AI .

Area: Technical Skill	
Core skills **S1: Utilize AI**	Definition Hands-on skills that enable individuals to use AI tools and systems in their daily lives appropriately, efficiently, and in line with their own needs.
Sub-skills **S1.2: Contextual Adaptation**	Definition Selecting and adapting AI to suit real situations or adjusting AI usage to meet individual needs, including the ability to use AI as a tool to help find answers, analyze and examine data from AI, create preliminary diagnostic conclusions, or suggest new options when encountering problems and obstacles.
Level	**Definition**
Basics **(1)**	Guided Practice and Manipulation - Open and enter questions or commands with AI. To answer simple questions As specified by the instructor/manual - Able to distinguish between credible and untrustworthy answers. - Consider the impact on others and society before publishing or using information, such as avoiding sharing fake news .
Intermediate **(2)**	Flexible and Precise Execution - Adjust the way you ask/command AI to get more relevant answers. - Verify AI -generated data by referencing multiple sources, such as news, government agencies, or local communities. - Analyze the results generated by AI and draw preliminary conclusions from the results, such as pros–cons, risks–opportunities. - Use AI to find multiple options, not just one answer. - Examine and filter potentially distorted/deceptive information (output verification) before disseminating it or using it for decision-making, so as not to affect yourself, others, and society. - Apply AI to find more than one solution, not relying on a single answer.
Advanced **(3)**	Naturalization and Integration - Learn new applications that fit your purpose. - Use AI as a tool to find new solutions when faced with unprecedented problems . - AI data with knowledge from other reliable sources to create contextually relevant answers. - Perform in-depth credibility checks, such as analyzing whether content is biased, misleading, or potentially offensive to others. - Use AI to support informed, safe, and societal decision-making. - Share how to apply AI critically and appropriately to others who use it in their family or community.

Area: Technical Skill	
Core skills **S2: Adapt AI**	Definition Customizing, adapting, connecting, and adapting existing AI systems to meet specific task contexts or challenges.
Sub-skills **S2.1: Configuration Skills**	Definition Set-up , configure , and adjust the parameters of the AI system to make it work according to the requirements of the task or project, using hands-on practice in managing the environment, tools , and technical adjustments.
Level	**Definition**
Basics **(1)**	Guided Practice and Manipulation - AI tools/ platforms or applications that align with the objectives or goals of the work . - Set basic settings such as selecting the language and interface . Consistent with the objectives or goals of the work - Use basic configuration templates in your work - Adjust basic parameters, such as adjusting the mode or selecting the output format, that are consistent with the purpose or goal of the task.
Intermediate **(2)**	Flexible and Precise Execution - Adjust parameters or settings to suit the needs of the task, such as report generation, communication. Presentation and analysis of data, etc. - Use customization tools/menus to achieve project-specific results, such as defining data processing formats. - Coordinate with your team to use consistent configurations , such as shared workspaces or project settings. - Verify the correctness of the results after adjustment and correct minor errors .
Advanced **(3)**	Naturalization and Integration - Customize parameters for complex tasks - Modify or create automation script/config file to reduce redundant work. - Create custom configurations for complex tasks/projects efficiently and securely.

Area: Technical Skill	
Core skills **S2: Adapt AI**	Definition Customizing, adapting, connecting, and adapting existing AI systems to meet specific task contexts or challenges.
Sub-skills **S2.2: Integration Skills**	Definition Connect , integrate , and enable AI systems to work efficiently with other systems, whether software, platforms, or real-world processes, to create workflows that meet the needs of organizations or users in their existing workflows .
Level	**Definition**
Basics **(1)**	Guided Practice and Manipulation - Connect to your existing software or platform (e.g. Google Docs, Excel, Chatbot) - Use ready-made integration tools according to templates . - Try running a simple workflow , such as having AI summarize , send an email , and forward it to another system. - Check first if the connection is working successfully or if there are any problems or issues.
Intermediate **(2)**	Flexible and Precise Execution - workflow steps to match the workflow, such as sending work data to target groups with AI- powered summaries. - integration tools to integrate AI with multiple enterprise systems (e.g. HR, ERP, learning management system). - Check the results carefully, such as the accuracy of the data that the AI sends to other systems. - workflow usage with departments or teams to check efficiency and accuracy.
Advanced **(3)**	Naturalization and Integration - Create more complex workflows, such as integrating AI and analyzing data → Prepare a report → Send automatic notifications in the work system - AI connectivity to solve previously unseen problems, such as automated data validation workflows. - AI integrations that enhance individual and team efficiency, such as intelligent dashboards or decision-making systems. - Create innovative work processes that use AI combined with existing systems to create new value, such as reducing work time, increasing transparency, or creating new services for users.

Area: Technical Skill	
Core skills **S2: Adapt AI**	Definition Customizing, adapting, connecting, and adapting existing AI systems to meet specific task contexts or challenges.
Sub-skills **S2.3: Customization Skills**	Definition Customizing the functionality of an AI system or AI application to meet the specific needs of users or organizations, using hands-on skills such as modifying functions, redesigning the interface, or improving AI behavior to suit the context of use.
Level	**Definition**
Basics **(1)**	Guided Practice and Manipulation - Use built-in menus or tools to customize AI output , such as writing style, reports, or tone . - Try choosing a template that the system provides to meet your needs. - Adjust basic settings such as language used, display format to match the purpose. - Verify that the customizations are working as desired.
Intermediate **(2)**	Flexible and Precise Execution - Customize functionality to fit the task, such as setting up analysis summaries, report writing, or a chatbot for the task. - Design custom interface / results For example, add the required data fields in the AI report. - Use AI customization tools to meet your agency's specific needs. - adapted AI results and the task goals.
Advanced **(3)**	Naturalization and Integration - Customize AI to work naturally with your organization's workflows , such as automatically generating meeting summaries and forwarding them to work systems. - Create new customizations that enhance performance, such as designing specific report templates for your organization. - AI behavior to the work context, such as choosing how to present information to users at each level. - Use AI customization to create innovations in work, such as intelligent task tracking systems or AI advisors for decision-making. - Adapt existing customizations to create new approaches that create additional value. and convenience and speed to the target group and the organization

Area: Technical Skill	
Core skills **S2: Adapt AI**	Definition Customizing, adapting, connecting, and adapting existing AI systems to meet specific task contexts or challenges.
Sub-skills **S2.4: Optimization Skills**	Definition Analysis Evaluate, improve, and optimize the performance of AI systems in terms of accuracy, speed, resource utilization, and stability to suit actual tasks and system limitations.
Level	**Definition**
Basics **(1)**	Guided Practice and Manipulation - default settings and make simple adjustments such as selecting the appropriate operating mode. - Experiment with adjusting the default settings to speed up results or save resources, such as reducing the number of outputs or adjusting the report format. - Notice and remember the difference in results when slight changes in settings occur. For best results
Intermediate **(2)**	Flexible and Precise Execution - Select the customization values (parameters) that are appropriate for the task, such as adjusting the summary format, data analysis, or search. - Evaluate speed, accuracy, and resource utilization to select the most appropriate method for the situation. - Optimize your AI workflow to suit your team, such as setting up data size or how to export results . - Continuously check the stability and accuracy of the results and correct any abnormalities.
Advanced **(3)**	Naturalization and Integration - Optimize AI to perform at its full potential, such as faster workflows , using fewer resources, but with more accurate results. - optimization approaches that improve the process of a task (e.g., reduce report preparation time from 2 hours to 30 minutes). - Create workflows or optimization best practices that organizations can reuse. - AI enhancements to create new value, such as adding additional features or adapting the system to work in multiple languages/platforms.

Area: Technical Skill	
Core skills **S2: Adapt AI**	Definition Customizing, adapting, connecting, and adapting existing AI systems to meet specific task contexts or challenges.
Sub-skills **S2.5: Applied Problem-Solving with AI**	Definition Identifying problems and defining the scope of AI's ability to solve them, in order to apply AI to specific problems, through selecting appropriate techniques/tools, designing solutions , and customizing AI systems to meet complex real-world situations.
Level	**Definition**
Basics **(1)**	Guided Practice and Manipulation - Use AI to solve basic, obvious problems, such as summarizing data, answering common questions, or helping write short messages. - Check the initial results to see if they match the desired question (true-false , acceptable-inappropriate). - Routine work analysis AI can be used to assist with work. - AI results can be used to solve immediate problems, such as creating memos and meetings.
Intermediate **(2)**	Flexible and Precise Execution - Identify the problems that are appropriate for the use of AI and clearly define the scope of AI's use in solving the problems. - AI technique/tool that is appropriate for the task, such as using NLP for text documents or image recognition for images. - Customize your workflow or AI usage methods to suit your specific situation, such as generating reports, analyzing data, or filtering data. - Verify the quality of the results by comparing them with criteria/standards or checking with other sources of information. - Apply AI to solve more complex problems, such as analyzing customer behavior, predicting data trends, or adjusting basic strategies.
Advanced **(3)**	Naturalization and Integration - Design innovative solutions that integrate AI with real-world processes. - Adapt AI or workflows to solve previously unseen problems or complex/uncertain situations. - Evaluate the impact of the solution created at the individual, team, and organizational levels, such as increasing efficiency, reducing errors, or creating new value. - Use AI to create innovations that build on existing work, such as automated decision-making systems and contextual insights. - Connect AI solutions to your organization's strategic goals to enhance decision-making and long-term development .

Area: Technical Skill	
Core skills **S3: AI Engineer**	Definition Design , develop, test, and improve AI systems through coding, modeling, infrastructure , and deployment for practical use in various tasks or projects.
Sub-skills **S3.1: Algorithm Design**	Definition Designing and building algorithms to solve specific problems, covering the definition of steps, selection of data structures, creation of logic, testing, and improving algorithm performance.
Level	**Definition**
Basics **(1)**	Guided Practice and Manipulation - Write a simple solution procedure in pseudo-code or flowchart format , following the given example. - Choose the basic data structure that matches the given problem. - Use basic logic to create simple algorithms. - Test the algorithm with small inputs and verify the correctness of the results. - Minor bug fixes can be made as per suggestions.
Intermediate **(2)**	Flexible and Precise Execution - Analyze problems and design algorithms using pseudo-code/flow charts without relying on the entire sample structure. - Choose the data structure that is appropriate for the specific problem or more complex problem. - Design your own algorithm logic without relying on all examples, such as using algorithmic refinement techniques. - Improve the algorithm to reduce time complexity or space complexity . - Test with a variety of datasets and be able to interpret test results to decide on algorithm modifications . - Apply the algorithm to real-world situations with limitations such as speed, stability , and efficiency.
Advanced **(3)**	Naturalization and Integration - Design new, complex algorithms or modify existing algorithms to suit specific organizational problems. - Fully integrate algorithms into your AI/ML workflow or pipeline . - Create innovative algorithmic solutions that improve efficiency or create new capabilities, such as real-time processing or scalable systems. - Evaluate the valuable results of the algorithm, such as reducing computational cost, reducing processing time, or improving the quality of the AI model.

Area: Technical Skill	
Core skills **S3: AI Engineer**	Definition Design , develop, test, and improve AI systems through coding, modeling, infrastructure , and deployment for practical use in various tasks or projects.
Sub-skills **S3.2: Model Development**	Definition Create a new machine learning or deep learning model from raw data (dataset), covering data preparation, model architecture selection, training, tuning, and testing until a model can be put to practical use.
Level	**Definition**
Basics **(1)**	Guided Practice and Manipulation - Prepare basic data such as cleaning data, splitting train/test data according to the specified steps. - Use ready-made libraries/frameworks to create basic models. - Train the model using the sample code and verify the correctness of the initial run. - Evaluate preliminary results against standard metrics such as accuracy, loss.
Intermediate **(2)**	Flexible and Precise Execution - Analyze the quality and structure of the dataset and perform feature engineering . - Choose an appropriate model architecture, such as a CNN for images , a RNN/transformer for languages. - Tune hyperparameters (learning rate, batch size, epochs , etc.) to improve model performance. - regularization, cross-validation, or Aata augmentation techniques to prevent overfitting. - Evaluate and compare multiple models to select the best model that suits the actual job.
Advanced **(3)**	Naturalization and Integration - Design a new model architecture or improve the existing architecture to be more efficient. - Combine multiple models (ensemble learning, hybrid models) to solve complex problems or increase accuracy. - Develop a complete pipeline from preprocessing → training → evaluation → deployment. - Deploy tested models into production environments . - Introducing new solutions that meet the strategic needs of organizations, such as models that support real-time data, low-latency AI systems.

Area: Technical Skill	
Core skills **S3: AI Engineer**	Definition Design , develop, test, and improve AI systems through coding, modeling, infrastructure , and deployment for practical use in various tasks or projects.
Sub-skills **S3.3: Data Engineering**	Definition Design , build, manage, and maintain data infrastructure and pipelines to make data available for AI/ML development , covering everything from extraction , transformation , loading , to data quality and security management.
Level	**Definition**
Basics **(1)**	Guided Practice and Manipulation - Follow the steps outlined to extract data from standard sources (CSV, API, basic database). - Use ready-made tools to perform basic data conversions. - Load data into a data warehouse or data lake - Check the initial data quality such as missing values, data bias, duplicate records. - Work with due regard for information security measures as determined by the organization.
Intermediate **(2)**	Flexible and Precise Execution - Design and build ETL/ELT Pipelines to suit specific applications . - Choose the right data structure and database, such as SQL vs NoSQL, columnar storage. - Perform advanced data transformation such as feature engineering, data normalization, schema mapping. - Systematically check data quality using data validation rules or automated checks. - Improve pipelines to run faster, save resources, and support higher data volumes. - Integrate the pipeline with other AI/ML development workflows that share data across the organization .
Advanced **(3)**	Naturalization and Integration - Design and build data infrastructure that supports both real-time and batch data for large-scale AI/ML. - Develop a scalable and resilient pipeline . - Establish standards for managing data quality, data bias, security, and compliance within the organization. - Fully integrate your data pipeline with your production AI/ML system - Use data engineering to create innovations such as real-time data analysis and building an internal data marketplace . - AI/ML capabilities .

Area: Technical Skill	
Core skills **S3: AI Engineer**	Definition Design , develop, test, and improve AI systems through coding, modeling, infrastructure creation , and deployment for practical use in various tasks or projects.
Sub-skills **S3.4: System Implementation**	Definition installing and integrating AI models into real-world systems (applications, platforms, services), covering everything from program development, API/SDK connections, creating appropriate UI/UX , to deploying AI systems for users to access and use.
Level	**Definition**
Basics **(1)**	Guided Practice and Manipulation - Select and install the tools/libraries required for AI use. - Use code to configure AI connections to subsystems (applications, services). - Run the initial AI model through the API/SDK and check the results. Are they responding efficiently? - Use UI/UX templates or ready-made tools to make AI results accessible to users. - Test simple functions such as connecting input–output data to an AI model.
Intermediate **(2)**	Flexible and Precise Execution - Develop applications or services that integrate AI into enterprise systems, such as chatbots and recommendation systems. - Customize the API/SDK to support specific functionality, such as real-time processing or connectivity with legacy systems. - Design and optimize UI/UX to present AI results , emphasizing usability and clarity. - Create AI workflows that meet the needs of your organization , such as automated reporting and in-depth data analysis. and data verification - AI- integrated systems under more complex conditions, such as high data volumes, multiple users, or unstable networks.
Advanced **(3)**	Naturalization and Integration - end -to-end AI -integrated applications/platforms, covering input → processing → output → outcome with real-world applications. - Deploy AI systems to production environments reliably, securely, and with a large user base. - Setting the standard for scalability, reliability, and security for enterprise AI-powered systems - AI systems into your organization's ecosystem , such as ERP, CRM, customer service systems, or data warehouses. - Create innovative services or new products that use AI as a core function, such as intelligent recommendation systems or intelligent automation. - Evaluate and demonstrate results that are truly valuable to the organization, such as reducing costs and increasing decision-making efficiency. and create new business opportunities

Area: Technical Skill	
Core skills **S3: AI Engineer**	Definition Design , develop, test, and improve AI systems through coding, modeling, infrastructure , and deployment for practical use in various tasks or projects.
Sub-skills **S3.5: Testing and Deployment**	Definition Testing the correctness, efficiency, stability, and security of AI systems and deploying them appropriately and efficiently in production environments, covering everything from unit tests, integration tests, model validation, to deployment on cloud, server, or edge devices .
Level	**Definition**
Basics (1)	Guided Practice and Manipulation - Unit tests and integration tests - Check the initial model results, such as accuracy or error rates, on the dataset. - Use a prepared environment (such as a docker image, Jupyter notebook, or cloud playground) to try deploying a basic model. - input–output testing , such as entering test data and verifying that the AI output works as expected. - Identify the basic problems found (bugs/errors) and report them according to the steps.
Intermediate (2)	Flexible and Precise Execution - Design test cases and select test datasets to test the model's performance, stability , and reliability. - model validation techniques such as cross-validation, A/B testing, or holding-out data. - Analyze test results to make decisions on improving the model or pipeline . - Deploy the system in a staging environment or environment that simulates the actual production environment and verify the end-to-end workflow. - Customize the deployment configuration (e.g. memory, response time, throughput) to suit the organization's needs. - Review system security and compliance issues such as data privacy and access control before implementation.
Advanced (3)	Naturalization and Integration - Deploy AI systems on production environments (cloud, on-premises, edge devices) that support large user bases and high data volumes. - Design and implement a CI/CD pipeline for automated testing and deployment of AI models. - Integrate monitoring and alerting systems to track model performance, stability, and model drift after deployment. - Continuously improve deployed AI systems , such as retraining, fine-tuning, and scalability improvements. - testing and deployment standards for the organization to be used as best practices that can be extended and connected to other lines of work within the organization. - Use deployment to create strategic value, such as improving user experience (UX), reducing infrastructure costs , or unlocking new business opportunities from AI systems.

Area: Technical Skill	
Core skills **S3: AI Engineer**	Definition Design , develop, test, and improve AI systems through coding, modeling, infrastructure , and deployment for practical use in various tasks or projects.
Sub-skills **S3.6: Continuous Improvement**	Definition Continuously evaluate, analyze, and improve AI systems to improve their quality, efficiency, stability, and relevance to new user needs and contexts through feedback , monitoring , and iteration of developed systems.
Level	**Definition**
Basics **(1)**	Guided Practice and Manipulation - Use dashboards or basic monitoring tools to monitor key performance metrics such as accuracy, latency, and error rates. - Perform simple adjustments such as threshold, batch size, or simple configurations. - Record and report user feedback or system errors found to the relevant team. - Perform initial iteration tasks , such as slightly retraining the model or testing parameter changes to address specific issues. - Report issues found from user feedback or from the monitoring system to the relevant team.
Intermediate **(2)**	Flexible and Precise Execution - Analyze problems caused by model drift, data quality issues, or recurring error patterns. - Design a clear iteration cycle, such as retrain → validate → deploy → monitor. - Use tuning techniques such as hyperparameter tuning, feature engineering, or pipeline optimization to suit the changing organizational tasks/activities. - Systematically review and evaluate improvements using relevant technical (performance, accuracy) and operational (efficiency, stability) metrics . - Improve the system to keep up with the situation and respond to new user needs or changes in the work process.
Advanced **(3)**	Naturalization and Integration - Design a continuous improvement framework that can be deployed across the organization (e.g., an MLOps pipeline that supports automated retraining and monitoring). - Integrate automated feedback loops and self-adaptive systems that allow AI to adapt itself to new data and context. - Use advanced techniques such as online learning, active learning, or automated retraining to continuously improve performance. - Assess the strategic impact, such as increasing competitiveness, reducing structural costs, or opening up new business opportunities. - Establish standards and best practices for AI improvement that can be expanded across lines of work /projects. - Use continuous improvement as a tool to create innovation for the organization, to be of quality and to gain trust from the target group and society.

Area: Technical Skill	
Core skills **S4: Manage Using AI**	Definition Organizational management using AI To increase work efficiency, make decisions based on data, create innovations, and maintain good governance standards in the organization's operations.
Sub-skills **S4.1: AI-Supported Decision Making**	Definition Executive decision-making using AI as a tool supports data analysis, prediction, and risk assessment to enhance decision quality while maintaining the primary responsibility for strategic and ethical decision-making by executives.
Level	**Definition**
Basics **(1)**	Foundational Use of AI Insights - AI -generated reports or dashboards to monitor trends and general situations. - AI -generated results can be used to track goals and performance, such as sales forecasts, customer satisfaction, or initial risk. - Use AI to confirm or verify the underlying assumptions in decision-making, where the role of AI is to support, not replace, executive decision-making. - Communicate within the organization the awareness, understanding and value of using AI in management and organizational development.
Intermediate **(2)**	Systematic and controllable application (Controlled Application) - AI results by combining AI data with internal organizational experiences and external context, such as laws, policies, or market trends. - Use AI to consider multiple impacts (economic, social, ethical) before making decisions. - Use AI to inform decision-making for stakeholders with transparency. - AI -powered analytics and predictions to assess your organization's risks and opportunities. - Adjust and define decision criteria based on AI results analyzed in collaboration with experts. - Use AI to create scenario analysis or simulate multiple outcomes before making a decision. - Anticipate project/policy risks and opportunities and adjust decisions based on insights. - Present AI -powered decision-making tools to teams and stakeholders, explaining the risks and ethical rationale.
Advanced **(3)**	Integrated Expert Performance - Design and implement an AI- driven decision-making framework, integrated with experiential data and contextual factors. - Establish guidelines or standards for the use of AI in decision-making to create transparency and accountability. - Use AI to assess strategic impact across multiple dimensions, such as economic, social, sustainability, and ethics, before making decisions. - communicate the use of AI in policy decision-making to stakeholders to build trust. - Supervise the use of AI to be transparent, ethical, and trusted by stakeholders and society. - Use AI to create policy and strategic innovations that help organizations become more competitive and socially acceptable .

Area: Technical Skill	
Core skills **S4: Manage Using AI**	Definition Organizational management using AI To increase work efficiency, make decisions based on data, create innovations, and maintain good governance standards in the organization's operations.
Sub-skills **S4.2: AI-Driven Process Management**	Definition The use of AI technology to efficiently design, control, and improve organizational processes to enhance quality, reduce redundancy, reduce costs, and increase organizational agility.
Level	**Definition**
Basics **(1)**	Foundational Use of AI Insights - existing AI tools , such as a process dashboard or workflow automation tool, to monitor workflow progress. - Analyze basic data that AI summarizes, such as bottlenecks or redundancies in routine tasks. - Check out AI recommendations for reordering tasks and reducing redundancy. or reducing unnecessary steps - Evaluate preliminary results from AI and use them to make decisions on simple tasks. - Communicate the results of the considerations obtained from using AI to support process development so that the department/ team can understand and apply them.
Intermediate **(2)**	Systematic and controllable application (Controlled Application) - Use AI to analyze complex processes and suggest ways to reduce costs and increase agility. - Improve or redesign workflows based on AI- generated results and simulations. - Use AI to prioritize tasks or resources to improve organizational efficiency. - use AI analysis and prediction , risk assessment (Risk analysis) along with management experience and external context - Design a work plan/process to reduce risks and obstacles. - Integrate AI into organizational meetings, planning, and performance evaluations
Advanced **(3)**	Integrated Expert Performance - Use AI to redesign core processes such as resource management, customer service, and supply chains. - Use AI to create process innovations, such as developing new business models or simplifying processes to provide higher quality and acceptable services. - Communicate and build trust with stakeholders that AI is being used to enhance organizational performance in a transparent and ethical manner . - Create a continuous improvement system that integrates AI monitoring and feedback for sustainability.

Area: Technical Skill	
Core skills **S4: Manage Using AI**	Definition Organizational management using AI To increase work efficiency, make decisions based on data, create innovations, and maintain good governance standards in the organization's operations.
Sub-skills **S4.3: Human and Enterprise Resource Management with AI**	Definition Using AI to manage human resources and organizational resources for maximum efficiency. AI will help analyze, plan, allocate, and track resource usage, including personnel, budget, time, and materials, to support decision-making, reduce bias, and create fairness, transparency, and agility in management.
Level	**Definition**
Basics **(1)**	Foundational Use of AI Insights - Use AI -generated dashboards or reports to track resource utilization status, such as staffing, budget utilization, or equipment utilization. - AI -generated results, such as time utilization data or budget forecasts, are used to consider routine tasks, waste, costs and expenses. - Analyze data from AI for planning In simple task allocation or resource imbalance resolution - Examine insights provided by AI to validate assumptions or initial decision-making approaches that reduce management risk. - AI insights to verify transparency and fairness of resource distribution. - Use AI to communicate in two ways so that the line/ team understands and uses it. AI supports collaboration
Intermediate **(2)**	Systematic and controllable application (Controlled Application) - Use AI to analyze resource needs such as manpower, budget, and time to balance them with organizational goals. - AI -generated forecasts to plan schedules, training, or operational resource allocation. - Control and monitor resource usage in real-time via AI , ready to make adjustments when errors or imbalances occur. - Use AI to help monitor and improve workload fairness and personnel distribution. - Evaluate resource utilization by linking it to quality indicators such as work efficiency, transparency, and personnel satisfaction.
Advanced **(3)**	Integrated Expert Performance - end-to-end resource management system that integrates AI into every step, from planning → allocate → follow → Evaluation - Use AI to define long-term HR and resource strategies , such as workforce planning, people and technology investments. - Establish policies and standards for the use of AI in resource allocation that are transparent, fair, and accountable. - Use AI to further innovations such as dynamic allocation systems or personalized career development for personnel. - Manage change (change management) to make personnel and stakeholders accept and trust in the use of AI. - Use the results of AI to manage human resources and organizational resources to create social value and corporate image that emphasizes fairness and Good Governance

Area: Technical Skill	
Core skills **S4: Manage Using AI**	Definition Organizational management using AI To increase work efficiency, make decisions based on data, create innovations, and maintain good governance standards in the organization's operations.
Sub-skills **S4.4: AI Governance and Ethics**	Definition Governance, policy formulation and responsible use of AI , based on principles of good governance , transparency, fairness, safety and protection of stakeholder rights, to prevent negative impacts, reduce bias and build social trust in the development and use of AI.
Level	**Definition**
Basics **(1)**	Foundational Use of AI Insights - Use AI in accordance with the organization's data security and privacy measures. - Monitoring the use of AI with a focus on transparency and traceability - Identify and provide feedback to the responsible department/team/personnel on any initial anomalies or biases from the AI system. - AI usage complies with the principles of fairness and non-discrimination at the basic level.
Intermediate **(2)**	Systematic and controllable application (Controlled Application) - Use AI to systematically examine risks related to fairness, transparency, bias, and data privacy. - AI audit trail process to track the decisions and performance of the AI system. - Apply the principle of accountability by assigning responsible persons for the use of AI in each process. - Regulate the use of AI in decision-making to prevent rights violations or injustice. - Using AI to communicate two-way with internal stakeholders in a clear, easy-to-understand language , and using feedback from stakeholders' opinions and needs to improve and develop further.
Advanced **(3)**	Integrated Expert Performance - Design and implement an AI Governance Framework that covers both enterprise and societal governance. - Use AI to shape policies and strategies that take into account ethical, fair, and human rights implications. - Develop and initiate new standards such as Fair AI Certification, Ethical AI Audit System that are verifiable and practical. - Establish stakeholder engagement mechanisms to build trust and transparency in AI use. - thought leader in using AI effectively. Good governance at the organizational, industrial, service and social levels - Use AI as a strategic decision support tool that creates sustainable economic and social value.

Area: Technical Skill	
Core skills **S4: Manage Using AI**	Definition Organizational management using AI To increase work efficiency, make decisions based on data, create innovations, and maintain good governance standards in the organization's operations.
Sub-skills **S4.5: Strategic Adaptation with AI**	Definition By using AI as a tool to support strategic adaptation by analyzing in-depth data, predicting trends, and designing flexible strategies to cope with economic, social, technological, and competitive changes, organizations can adapt their structures, operations, and decision-making to keep pace with the situation, creating strategic advantages and long-term sustainability.
Level	**Definition**
Basics **(1)**	Foundational Use of AI Insights - Use AI- powered dashboards or reports to track trends and key indicators of plans/activities that impact operations. - Verify the accuracy of data from AI and use it to inform fundamental decisions. - Analyze and make decisions based on AI -provided recommendations to improve practical operations quickly and effectively. - Use AI to convey information through two-way communication to create understanding, adaptability, and timely adjustment to the situation.
Intermediate **(2)**	Systematic and controllable application (Controlled Application) - Use AI to analyze trends and predict complex situations (e.g., the economy, consumer behavior, technology) to adjust organizational strategies. - Apply AI data to align plans, resources, and processes with strategic goals. - Use AI to test different approaches (scenario analysis) and select the option that reduces risk. - Control and monitor the results of strategy adjustments using AI feedback and evaluation systems. - AI- driven strategy adjustments to teams and stakeholders.
Advanced **(3)**	Integrated Expert Performance - Use AI as an assistant in designing high-level corporate strategies and setting long-term directions. - Integrate AI into your organizational structure, core processes, and work culture to create an agile organization that can adapt to rapid change. - Create new innovations such as AI-driven business models or services/products based on deep AI analysis. - Apply AI to change management to enhance employee engagement, understanding, and trust. - Evaluate the multidimensional impacts (economic, social, environmental) of AI use , including collecting and analyzing stakeholder data to integrate into strategic decision-making with AI.

The National Board of Digital Economy and Society Office

Address: 120, Moo 3, 3rd and 5th Floors,
Government Complex Chaengwattana (Building C),
Soi Chaengwattana 7, Chaengwattana Road,
Thung Song Hong Subdistrict, Lak Si District,
Bangkok 10210, Thailand
Tel: +668 0072 7072
Email: saraban@bde.go.th

https://www.bde.go.th