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Patent Examination Practice on Emerging Technologies in the ASEAN Member States – Phase 2

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Patent Examination Practice on Emerging Technologies in the ASEAN Member State

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In the Joint Statement of the Ninth ASEAN–Japan Heads of Intellectual Property Offices Meeting, the Meeting delegated a survey on the case study presented by the Japan Patent Office (JPO) to the Economic Research Institute for ASEAN and East Asia (ERIA), aimed at promoting the development of patent examination guidelines in the ASEAN IP offices. The ERIA conducted and completed the survey as the 'ERIA Research Project 2019–2020: Research of Patent Examination Practice on Emerging Technologies in the Region of ASEAN Member States (AMS)'.

Furthermore, at the 11th ASEAN–Japan Heads of Intellectual Property Offices Meeting, the importance of conducting further research on different aspects of patentability was recognised, and it was decided to continue the research. The second phase of the study was carried out from 2021 to 2022. This report is the second phase report of this research.

ERIA reports that the research was undertaken and the report prepared by the Shobayashi International Patent & Trademark Office in Tokyo.

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Executive Summary

The Eleventh ASEAN–Japan Heads of Intellectual Property Offices Meeting held in 2021 agreed on an ASEAN–Japan Intellectual Property Action Plan. The agreed-upon plan includes continued research and studies of each ASEAN member state's patent examination guidelines in emerging technologies. The first phase of such research was initiated in 2019 and 2020 based on the agreement made at the Ninth ASEAN–Japan Heads of Intellectual Property Offices Meeting.

Further, the second phase was again delegated to the Economic Research Institute for ASEAN and East Asia (ERIA).

This report contains the results of the research conducted in 2021 and 2022 by the ERIA delegated from the above-identified Meeting. The Research by the ERIA was carried out based on two viewpoints: the present situation regarding the patent examination guidelines in each ASEAN member state, primarily since the previous ERIA research, and the assessment of the patentability or description requirement of three case examples newly presented by the JPO based on the JPO Guidelines.

As a result of the research, many ASEAN IP offices utilised the first phase of this ERIA research as an impetus to further examine their patent examination guidelines for emerging technologies. S

Even though preparation of the guidelines for assessing the patentability of emerging technologies represented by artificial intelligence (AI) is still at the stage of laying the groundwork in the ASEAN as a whole, some ASEAN IP offices made significant progress in elaborating on which issues needed to be focused on dealing with such technologies. Several offices developed specific patent examination guidelines for emerging technologies besides their 'general' examination guidelines.

This second phase of research was conducted by directing all of the ASEAN IP offices. However, like the previous research in 2019–2020, the states that do not conduct substantive examination for patent applications by themselves – i.e. Brunei Darussalam, Cambodia, Lao PDR, and Myanmar – work towards the establishment of patent examination guidelines in an inevitably different manner from the states that conduct substantive patent examination. In particular, Myanmar approved the Patent Law in 2019 but waited for its enforcement. As in the first phase of the research, the member states need to be divided to form a group of states conducting substantive patent examination and another group not conducting it. These states are arranged in alphabetical order in each group.

First, a simple introduction will be made here on how the ASEAN IP offices have deepened emerging technology–focused examination guidelines since the first phase of the research. Six IP offices responded that they have started internal discussions on examination guidelines specific to emerging technologies with the first phase of research as an impetus or they have further expedited, after the previous research, discussions on examination guidelines for emerging technologies, which was carried out even before the first phase of the study. The six IP offices include those of Indonesia, Malaysia, Philippines, Thailand, Viet Nam, and Brunei Darussalam. Even at these IP offices, the expansion of examination guidelines is not specialised to AI. The current situation is that they instead initiate patent examination guidelines focusing on computer software (CS), business models (BM), information and communications technology (ICT), and computer-implemented inventions (CII) with a prediction for application to AI-related inventions in the near future.

IP offices warranting special mention are those of Malaysia, the Philippines, and Viet Nam. These IP offices have achieved the expansion of the contents of patent examination guidelines specific to emerging technologies, the incorporation of concrete case examples in the track of the JPO into examination guidelines, and the review of the patentability and description requirements in accordance with the characteristics of emerging technologies.

The ASEAN IP offices continue efforts to expand patent examination guidelines in line with their present and real states of patent examination. The efforts of each office should get an appropriate evaluation. Regarding issues that respective offices consider challenging to overcome in studying patent examination for emerging technologies related to this research, common issues can be found in the basis thereof. However, there is a difference in the development of patent examination among the offices.

The following issues are picked up: there are few knowledge bases or experiences on emerging technologies such as AI; understanding cannot catch up with the rapid progress of technologies; there is a shortage of human resources in IP offices to be utilised for the study of emerging technologies; and there are few chances for learning these technologies. To address these issues, the IP offices hope to receive support from IP offices of advanced states, including the JPO, to improve their ability to conduct patent examinations on emerging technologies.

Under such demanding situations, several IP offices have given an evaluation that the work towards the ERIA research has led to the improvement of learning and empirical values.

For case studies, the JPO has presented three case examples for this research to the ASEAN IP offices in the same manner as for the first phase so that research and opinion exchanges can be conducted. Unlike the first phase, the three case examples for this research are not only for AI-focused cases but their technical fields are expanded to technical areas involving

the Internet of Things (IoT) broadened from AI.

For the novelty test, each ASEAN IP office virtually conducted examinations using Case Example 1 (combination claim; IoT technology) prepared by the JPO. Generally, most of them agreed with the JPO's conclusion; however, three IP offices (Singapore, Lao PDR, and Myanmar) showed a different opinion from JPO's conclusion that 'Claim 1 lacks novelty'.

Concerning Case Example 2 (presentation of experimental data or prediction data; AI-related technology) to stimulate discussions on the description requirements, the ASEAN IP offices consequently derived the same examination result due to the same ground as the JPO. That is, each ASEAN state, in principle, requires applicants to provide sufficient disclosure in the description in all of the technical fields as one of the description requirements. Then, the examination result is that to prove that the disclosure is 'sufficient', the applicant is requested to submit concrete experimental data in case the accuracy of prediction data generated by AI is not verified. It is not common technical knowledge that the prediction data can be a substitute for actual experimental results.

For the patent eligibility, Case Example 3 (patent eligibility for mere presentation of information; IoT-related technology) was used. All ASEAN IP offices that studied Case Example 3 showed the same opinion as the JPO; that is, the examination result shows that 'presentation of information', wherein presentation of information per se does not have a technical characteristic and a presented information content alone has a part, is not eligible for patent.

Lastly, in conducting this research, we could not avoid the impact of COVID-19. Like in the study's first phase, intensive face-to-face discussions with each ASEAN IP office were expected for the project. However, only five member states had day-long elaborate discussions on patentability judgement during a visit to these states. For the remaining member states, all complex discussions on the research were conducted by e-mail exchanges. Such communications might have lost many portions. On the other hand, counterparts at the respective ASEAN IP offices involved in this research have firmly established relationships with each other through communications through repeated e-mails. Having specified partners for a discussion on examination for AI in ASEAN is of great significance for the future deepening of patent examination guidelines in the ASEAN region.

The counterparts of the respective member states are listed in Reference 2 of this report. From now on, these counterparts are expected to become the centre of discussions to advance collaborative work with the JPO towards establishing patent examination guidelines on emerging technologies.

Chapter 1

ASEAN Intellectual Property Offices that Participated in this ERIA Research Project

In conducting the research, we received active cooperation under the leadership of the respective heads of IP offices in the ASEAN 10 member states. To exchange opinions on the research, patent examiners, experts in examination guidelines, experts in charge of laws and regulations, persons in charge of international operations, and many others from each office contributed, thereby realising the research.

BN: BruIPO .... Brunei Darussalam Intellectual Property Office

KH: DIP/MISTI .... Department of Industrial Property of Cambodia
Ministry of Industry, Science, Technology and Innovation

ID: DGIP .... Indonesia Directorate General of Intellectual Property

LA: Laos DIP .... Laos IP Department

MY: MyIPO .... Intellectual Property Corporation of Malaysia

MM: Myanmar IP Department

PH: IPOPHIL .... Intellectual Property Office of the Philippines

SG: IPOS .... Intellectual Property Office of Singapore

TH: DIP .... Thailand Department of Intellectual Property

VN: IP Viet Nam .... Intellectual Property Office of Viet Nam

Chapter 2

Introduction of ERIA Research Project and its Objectives

2.1. Background of the Project

The number of patent applications in ASEAN member states has been increasing in recent years due to rapid economic growth in the region. This increase is expected to continue in the future. Above all, patent applications related to emerging technologies, such as the Internet of Things (IoT) and artificial intelligence (AI), are increasing in particular regions or developed countries worldwide, including in ASEAN Member States (AMS). Considering this situation, the JPO has improved its Examination Guidelines for Patents and Utility Models and the Examination Handbook for Patents and Utility Models.

The Ninth ASEAN–Japan Heads of Intellectual Property Offices Meeting delegated a case study (research) to ERIA to enable ASEAN IP offices to compare patent examination guidelines among AMS and further enhance their guidelines.

> <Excerpt from Joint Statement of Ninth ASEAN–Japan Heads of Intellectual Property Offices Meeting: 6 August 2019>
>
> *5. In particular, the Partners, in taking special notice of the fact that the Chairman's Statement of the 2018 ASEAN–Japan Summit urged the development of patent examination guidelines in AMS IP offices, confirmed that they will contribute to the case study being conducted by the Economic Research Institute for ASEAN and East Asia (ERIA), the aim of which is to enhance the predictability of patent examination results. In addition, the Partners agreed to undertake initiatives that address translation issues that may arise in the patent application process, in order to enhance connectivity among ASEAN Member States and Japan.*

Based on the joint statement of the 9th ASEAN–Japan Heads of Intellectual Property Offices Meeting, the research project was conducted from 2019 to 2020. The results of that research (2019–2020) were reported at the 11th ASEAN–Japan Heads of Intellectual Property Offices Meeting, held in August 2021 by ERIA. To deepen the cooperation between the JPO and ASEAN IP offices and further improve and harmonise patent examination in ASEAN concerning examination guidelines on emerging technologies in ASEAN, the 11th Meeting determined to (i) continue this research by ERIA further and (ii) provide a new ASEAN–Japan patent experts' meeting to share the results and findings of the research.

Given the above, the research by ERIA conducted in 2019 and 2020 is the first phase, and the subsequent research of the second phase was conducted in 2021 and 2022. This report summarises the research results of the second phase.

2.2. Objectives of the Project

The case study for patent examination practice, especially focused on emerging technologies in AMSs, would inform the IP offices in the region about how to deal with the increasing number of patent applications of such technologies, bearing in mind the outlook of economic growth and world trends in the number of patent applications of ASEAN member states. This case study is thus expected to enhance and facilitate the further development of patent examination guidelines and standards on emerging technologies in each ASEAN IP Office.

Furthermore, patent examination cooperation amongst the five IP offices (Japan, the United States, Europe, China, and the Republic of Korea [henceforth, Korea]) has been conducted to reduce examination burdens of each office through enhancing common examination guidelines on emerging technologies and mutual exploitation of other patent offices' examination results. This could result in the reduction of workload for each patent office.

This second phase of the case study targeting ASEAN IP offices would also contribute to the orchestration for standardisation of patent examination practices amongst the IP offices in ASEAN and the five IP offices. Such a step forward would benefit patent applicants filing applications concerning emerging technologies with major world markets.

Chapter 3

Methodologies of the Research

3.1. Methodologies

In pursuit of the objectives mentioned above to meet the request made by the Ninth and Eleventh ASEAN–Japan Heads of Intellectual Property Offices Meetings (from now on referred to as ASEAN–Japan IP Heads' Meeting), the study is specifically required to focus on emerging technologies. This study comprises two phases: i.e. the first phase of the research (2019–2020), which is derived from the result of the Ninth ASEAN–Japan IP Heads' Meeting, and the second phase (2021–2022) initiated by the agreement at the Eleventh ASEAN–Japan IP Heads' Meeting. The study should also be conducted through elaborated and concrete discussions on the three case examples presented by the JPO in light of such technologies. These different case examples are used for each phase, so many aspects of the emerging technologies will be covered.

First, this study needs to clarify the examination practices of each ASEAN IP office by analysing patent examination guidelines and related laws and regulations. The second phase focuses on the recent progress or developments in enriching their patent examination guidelines since ERIA's first research phase. Then, ASEAN IP offices are requested to consider the JPO's case examples of the study already shared in the ASEAN–Japan Heads' Meeting and conduct a day-long on-site discussion with the JPO and each ASEAN IP office.

3.2. Conducting Prior Survey Titled 'Topics of Discussion for Collaborative Meeting to Discuss Patentability Requirements Given Patent Examination Case Examples on AI-related Patent Applications' and Holding Face-to-Face Meetings

The research was carried out through two steps. First, each ASEAN IP office was asked to respond to a questionnaire in the form of Q&A as a prior survey. In succession, ASEAN's responses to the Q&A were carefully examined between the ERIA and persons in charge of the relevant ASEAN IP Office. ERIA then visited the respective IP office to hold an on-site discussion meeting planned for a day. However, as described in Chapter 5, a face-to-face meeting with an IP office was realised only in five member states due to restrictions caused by the COVID-19 pandemic. As for the remaining five countries where the visit was not realised, we had to confirm their detailed assessment of patentability/description

requirements in their patent examination guidelines according to their responses to the Q&A and their subsequent follow-ups of the Q&A.

The structure of the questions in the Q&A will be explained in detail in Chapter 7. If summarised, the questions in the first half of the Q&A ask about the legal basis of their patentability and description requirements standards, recent developments in patent examination guidelines, filing trends of AI-related inventions, current problems to be solved, and the like. The second half of the Q&A solicits the assessment of patentability by each IP office while explaining the core elements of each of the JPO's three case examples in assessing the patentability/description requirements.

In the five member states – Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam – with which the exchange of opinions through a visit to their IP offices was realised – almost a full work day was spent on the research and opinion exchange to explore further the questions and answers covering the Q&A. The face-to-face exchange of opinions not only enabled a better understanding of minute nuances but also enabled participants to share, during the exchange, the experiences and knowledge on the examinations of AI-related inventions that the JPO had acquired so far.

Whether the Q&A and the subsequent exchange of opinions to clarify the responses presented in the Q&A were conducted by a visit to an IP office or by email, concrete research was made available. This resulted from the close cooperation of all the people involved, such as those in charge of patent examination guidelines, examiners, and international operations of each IP office. This point should be emphasised.

Those in charge of the IP offices of the respective member states involved in the research are listed as 'counterparts' in Reference 2. In the future, when the assessment of patentability and the role of examination guidelines are discussed at a deeper level in ASEAN with specific knowledge further gained on emerging technologies, such as AI-related inventions, the counterparts involved in the research will serve as the centre of such discussions. Additionally, the patent examination guidelines of each member state will be updated to a more detailed and higher-quality level than the present through mutual collaborative work amongst these counterparts.

3.3. Definition of AI-related Technologies

In examining AI-related inventions, it is necessary to specify the kind of AI-related invention.

AI-related inventions are regarded as collectively referring to software technologies that enable a computer to perform the intellectual activities human beings can do. However, 'AI-related inventions' are defined in the research following the JPO-announced material of

'Recent Trends in AI-related Inventions – Report' issued in July 2020. As shown in 1-1 of the 2020 report, an AI-related invention includes an 'AI core invention and an 'AI-applied invention' where AI is applied to various technical fields. Based on such a definition, this research was conducted.

The JPO explains AI core invention and AI-applied invention in the 2020 report, respectively, as follows:

(A) AI Core Invention:

> Inventions characterised by mathematical or statistical information processing technology that forms the basis of AI, such as various machine learning methods including neural network, deep learning, support vector machines, and reinforcement learning, in addition to knowledge-based models and fuzzy logic, etc. (The FI, which is a classification unique to the JPO that has been expanded based on IPC, to be assigned is mainly G06N ('Computer systems based on specific calculation model').

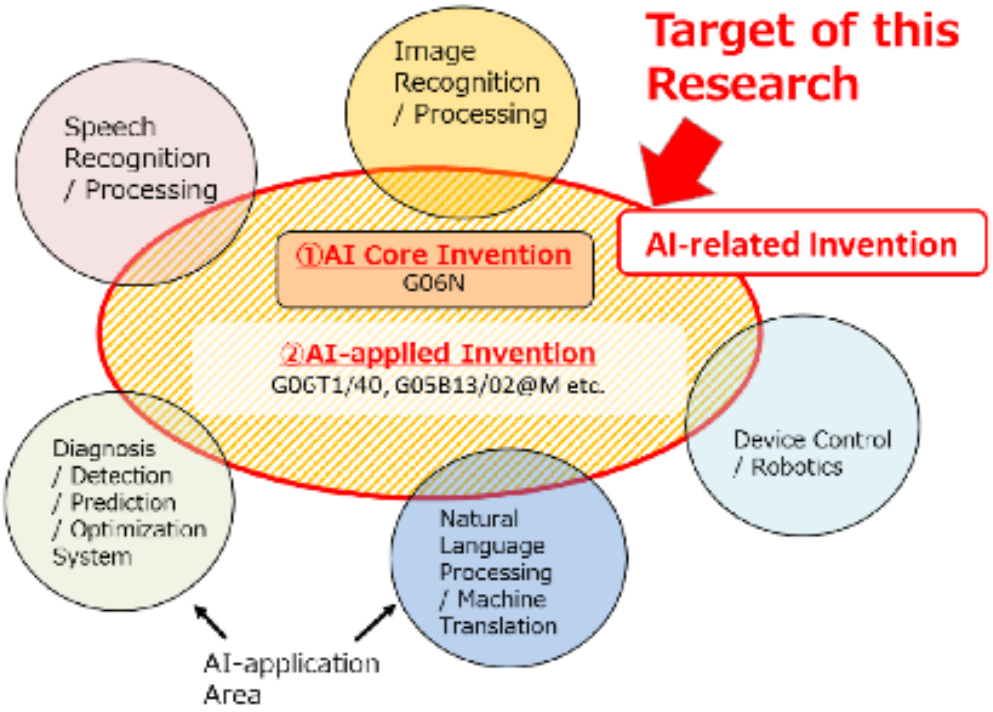
(B) AI-applied Invention:

> Inventions characterised by applying an 'AI Core Invention' to various technical fields such as image processing, speech processing, natural language processing, device control/robotics, various systems for diagnosis, detection, prediction, optimisation, etc. (Several FIs would be assigned.)

The JPO mentions that this definition of an AI-related invention is not general but is used only in the above report. It is not an official definition of JPO either.

The following reference drawing from the JPO's Report illustrates the relevance of AI-related invention = 'AI Core Invention' + 'AI-applied Invention' as above.

Figure 4.1. Target of This Research (Scope of AI-related Invention)



Source: JPO's 'Recent Trends in AI-related Inventions (August 2021)' Excerpt from 'Figure 1: Target of this Research (Scope of AI-related Invention)' used in 'Recent Trends in AI-related Inventions – Report',
https://www.jpo.go.jp/e/system/patent/gaiyo/ai/document/ai_shutsugan_chosa/report.pdf

Chapter 4

Restrictions Caused by the COVID-19 Pandemic

The first phase of this research commenced in October 2019 and 2020. It was on 8 December 2019, according to an announcement from the World Health Organization, that the world's first case of COVID-19 was confirmed. After that, COVID-19 explosively expanded around the globe.

After that, COVID-19 became rampant worldwide; its infection abated in the latter half of 2022. Then, the world has gradually shifted to a new society 'with COVID-19'. This research was conducted amidst the spread of COVID-19.

This research's first and second phases also had to be greatly restricted due to the COVID-19 pandemic. As shown in Chapter 4, Methodologies of the Research, the core portion of the initially planned research was that the subcontractor entrusted with the study would have visited each ASEAN IP office and exchanged opinions face to face approximately over an entire workday. However, a part of the initial plan for the research was not realised.

Face-to-face in-depth discussions were realised by an on-site visit only in the following five member states:

Indonesia Directorate General of Intellectual Property (DGIP):

Opinions exchanged on 30 January 2023

Intellectual Property Office of Viet Nam (IP Viet Nam):

Opinions exchanged on 2 February 2023

Intellectual Property Office of the Philippines (IPOPHIL):

Opinions exchanged on 20 June 2023

Intellectual Property Corporation of Malaysia (MyIPO):

Opinions exchanged on 22 June 2023

Thailand Intellectual Property Department (DIP):

Opinions exchanged on 22 June 2023

As for the five member states other than the above, the assessment of patentability and the current state of each state's patent examination guidelines were confirmed based on the responses to the Q&A and communications by email. It was extremely difficult to

understand patentability through close discussions over time; the understanding was initially expected through a face-to-face exchange of opinions.

On the other hand, because of opinion exchanges by email, communications with each IP office were all the more fairly frequent. Although the accompanying workload increased, frequent email exchanges solidified the relationship between ASEAN IP offices and the ERIA team. The 'counter partnership' developed in the difficult situation of the COVID-19 pandemic is considered to function quite meaningfully in the future discussions of the patentability assessment between the ASEAN IP offices and the JPO or amongst the ASEAN IP offices.

We hope that the list of counterparts attached to this research report as Reference 2 will be utilised as a basis for further in-depth discussions on the patentability of AI-related technologies for the future.

Furthermore, any insufficiencies in the depth of discussions due to the COVID-19 pandemic should be supplemented by the continued cooperative and collaborative work with counterparts of the ASEAN IP offices in the future.

Chapter 5

JPO's Three Hypothetical Case Examples

AI-related inventions are mainly supposed to be examined as software-related inventions. In such cases, unique issues not existing in conventional software-related inventions are found in AI-related inventions. It is necessary to extract and specify issues unique to AI-related inventions and to confirm and research the assessment of these issues in the patent examinations of ASEAN IP offices.

The JPO mainly set forth three issues about AI-related inventions. Then, as the base for discussions in the research, it was decided to use JPO's hypothetical case examples for discussing the respective issues.

The three issues are the assessment of (i) 'novelty' in examining IoT-related technology, especially 'combination/sub-combinations' invention; (ii) 'description requirements' in examining the sufficiency of the disclosure supported by so-called AI-generated data; and (iii) 'eligibility of patent' in examining IoT-related technology, especially regarding inventions which appear to be 'presentation of data'.

Applied to each issue is: (i) Case Example 1 (novelty): The title of the invention is 'Robot Apparatus'; (ii) Case Example 2 (description requirements): The title of the invention is 'Anaerobic Adhesive Composition'; and (iii) Case Example 3 (eligibility of patent): The title of the invention is 'Sugar Content Data of Apples and a Method for Predicting Sugar Content Data of Apples'. For the ASEAN IP offices, the issues of each case example were briefly extracted, and the research was conducted on such narrowed-down issues.

As is clear from the above, case examples presented in the second phase of the ERIA research differ from those of the first phase of research, and they are not limited to inventions specialised in AI. Instead, they are extended to IoT-related inventions, which are created by using AI. Thus, the second phase has required studies on case examples with a more applicative idea than the first phase, which studied the examination guidelines on AI.

For your further reference, the JPO's three case examples used for the first phase of this ERIA research are shown below.

Case Example 1: Assessment of 'patent eligibility' in examining teacher data, trained parameter, etc. data, and a trained model.
The title of the invention is 'Trained Model for Analysing Reputations of

Accommodations'.

Case Example 2: Assessment of 'inventive step' in examining technology in the specific field using the software in which the trained model is incorporated. The title of the invention is 'Estimation System of Hydroelectric Generating Capacity'.

Case Example 3: Assessment of 'description requirements' in examining a product created (outputted) by the software in which the trained model is incorporated. The title of the invention is 'Business Plan Design Apparatus'.

The <Issues> below were also included in the Q&A sent to the ASEAN IP offices. The purpose of such an arrangement was to avoid discussions deviating from the issues due to the assumed possibility that comprehension of each case example might differ in various ways from one ASEAN IP officer to another.

In the first phase, <Issues> were described in the Q&A to indicate arguing points that the case examples presented to the ASEAN IP offices. The <Issues> enabled the IP offices to understand well which aspect of AI patent examination we encouraged the IP offices to consider carefully, and thus, received favourable reviews from the IP offices. However, at the same time, we have realised that many IP offices have concerns regarding their understanding of the causes (backgrounds) and interrelationships of arguing points when discussing AI-related technologies.

Considering the observation mentioned, in the second phase, <Background> is clarified in the Q&A, in addition to <Issues>. These enabled the ASEAN IP offices to quickly understand what point the JPO would like the IP offices to study based on what background through example cases.

The <Issues> and <Background> for each case example, drafted to understand better and discuss each example, are as follows.

(1) Case Example 1 (novelty): The title of the invention is 'Robot Apparatus'.

<Issues> Case Example 1 raises the issue of contemplating whether the additional references to or mentions about another device would establish 'novelty' in the situation where the referred-to device per se is not the claimed subject matter but is inevitable for the functioning of the claimed invention (both the claimed invention and the referred-to device should work in pairs as a combination). To this end, we must consider in what circumstances such references to the other element of a combination invention would play a key role in assessing its novelty.

<Background> The importance of the discussion over this example is derived from the emerging circumstances where internet services are often used for connecting computers, IT servers, and other apparatus constantly in our daily lives (i.e. IoT). This technical advancement would be expanded even more in the future, making many 'things' connect with internet networks and having them function in 'combination' with others.

(2) Case Example 2 (description requirements): The title of the invention is 'Anaerobic Adhesive Composition'.

<Issues> 'Case Example 2' raises the issue of contemplating whether the claimed invention is sufficiently supported by the embodiment or a working example of the invention (sufficiency of disclosure) if the prediction results by an AI-trained model are used to demonstrate the invention. AI-generated prediction results may or may not be substituted for demonstrative examples to satisfy the enablement requirements of the description sufficiently.

As a hypothetical premise of this case example, it is not common general technical knowledge at the time of application of the invention that the prediction results of the trained model can usually replace the experimental results in an anaerobic adhesive composition.

<Background> With the advancement of AI-related technologies, AI-generated data can now be used to demonstrate inventions at the field operation level. In addition, AI has made it possible to demonstrate inventions more efficiently than conventional experiments, which are costly and time-consuming.

Thus, the importance of the discussion over this example is whether the IP offices can ensure the reliability of such AI data in the patent examination process, considering the secretive nature of AI itself and the fact no one may reproduce AI-generated data.

(3) Case Example 3 (patent eligibility): The title of the invention is 'Business Plan Design Apparatus'.

<Issues> Case Example 3 raises whether 'mere presentation of information' is eligible for a patent. 'Mere presentation of information' here means that the feature resides solely in the content of the information or data, and the main object is to present information.

<Background> Several facets determine the eligibility of AI-related technologies: acquisition, management, analysis, and utilisation of the information (data) generated by AI. Although much attention has been paid to the utilisation of AI-generated data, it is now necessary to examine the eligibility of the AI-generated data itself.

Patent examinations in many countries have held that 'presentation of data' does NOT fall under the category of invention. However, there is a view that an invention is eligible if there

is a technical feature in the 'way of presentation' of the data, rather than a feature only in the content of the data.

The original of these case examples presented by the JPO is attached as Reference 3 (References 3-1 and 3-2). These three case examples were presented to the heads of the ASEAN IP offices by the JPO in the ASEAN–Japan IP Heads' Meeting in 2021 and have been agreed upon as the research basis upon commencement of the research.

For reference, the attached JPO's case examples are numbered by ERIA paragraph by paragraph to facilitate discussions during the second phase of this research.

Chapter 6

Q&A concerning Patent Examination and Patentability Assessment of AI-related Inventions

To conduct the research efficiently and meaningfully, it is essential to sufficiently share the recognition of the same issues before 'face-to-face' discussions with each ASEAN IP office.

As mentioned above, face-to-face discussions with the IP offices were extremely restricted. However, from the viewpoint of making the basis for exchanging specific opinions with the IP offices, the prior survey (exchanges of ERIA's Q&A) greatly contributed to sharing the issues in advance. Two aspects and three layers configure the Q&A.

First, with regard to Aspect 1: Finding out the basic present conditions regarding the patent examination guidelines of each IP office, especially any progress or developments made after the first phase of the ERIA research, and Aspect 2: Exploring in-depth based on the understanding of the present conditions as to how each office assesses the examination of JPO's three case examples. Furthermore, Aspect 2 has three layers divided according to the JPO's case examples. Layer 1 is related to Case Example 1 and configured by the questions about 'novelty'. Layer 2 asks about the idea of 'description requirements' on which Case Example 2 focuses. and Layer 3 includes questions about the idea of 'patent eligibility'.

Gist of ERIA's Q&A = Topic of Discussions for Collaborative Meeting with ASEAN IP offices:

Aspect 1 (Q1-Q13): Find out the legal basis of patentability and description requirements and recent developments regarding the office's patent examination guidelines.

Aspect 2 (Q14-Q24): Conduct studies on the three JPO case examples and conclude the studies by deciding whether the inventions concerned are considered 'patentable', respectively.

Layer 1 (Q14-Q16): Case Example 1

'Robot Apparatus' for assessment of novelty

Layer 2 (Q17-Q21): Case Example 2

'Anaerobic Adhesive Composition' for assessment of 'description requirements'

Layer 3 (Q22-Q24): Case Example 3

'Sugar Content Data of Apples and a Method for Predicting Sugar Content Data of Apples' for assessment of 'eligibility for patent'

We received extremely vigorous cooperation from each ASEAN IP office in their efforts to respond to the Q&A. After proposing the Q&A to each office, we asked our counterparts to reply within 3 weeks. Upon receipt of the responses from each office, we exchanged opinions to ask necessary questions further and unify the format and expressions while confirming and closely examining the contents of the responses. We could not visit five IP offices due to restrictions caused by the COVID-19 pandemic, so opinions had to be exchanged only by email. With these offices, exchanging emails in a substantially greater number was naturally needed than initially expected. For the entire ASEAN offices, approximately 200 emails were exchanged, through which ERIA's Q&A was compiled. This number of exchanged emails is a testament to the ASEAN IP offices' high interest and enthusiasm for examining AI-related inventions.

The attached Reference 1 is the original of ERIA's Q&A and the responses from the ASEAN 10 IP offices. Further, the points of summaries of the responses from each office are introduced in Chapters 8 and 9.

In addition, the attached Reference 4 is a presentation material prepared by ERIA to show the background of the research and the points of JPO's three case examples. All of these were especially for the face-to-face exchange of opinions with the ASEAN IP offices. This material as a prerequisite for efficient and effective exchange of opinions was used for unifying the basis for discussions, such as definitions and explanations of the terminologies used in the case examples. However, the actual use of the material was only on the occasion of opinion exchange with each of the five IP offices with which face-to-face exchange of opinions was possible.

Lastly, we take this opportunity to express our deep respect to the respective ASEAN counterparts (Reference 2) who sincerely devoted themselves to researching and analysing the complex cutting-edge issues of AI.

Chapter 7

Results of the Research (General Issues)

1. ASEAN at a Glance (General)

Table 7.1. Availability of Patent Examination Guidelines (GLs)/Emerging Technology–focused GLs

	ID	MY	PH	SG	TH	VN
Discussions accelerated, triggered by the first ERIA research <Q2>	YES: But still focusing on **CS** and **BM** technologies, not AI or IoT	NO: Even before the research, intensive discussions were carried out.	YES: Making separate guidelines was even accelerated by the ERIA research.	NO:	YES: But no progress yet A plan to enrich the guidelines will be made.	YES: Making separate guidelines was even accelerated by the ERIA research.
Availability of patent exam. GLs <Q3>	YES: Publicly available in Indonesia	YES: Publicly available in English	YES: Publicly available in English	YES: Publicly available in English	YES: Publicly available in Thai	YES: Publicly available in Vietnamese
Emerging technologies-focused ('separate') Patent exam. GLs <Q5-Q6>	YES: Separate parts for **CS** and **BM**. (But only cover eligibility and patentability)	YES: **Amended Patent Exam. GLs** are completed in Feb. 2023, which include emerging technologies.	YES: Ever-updating ICT-CII GLs are further revised and include more case examples to cover emerging technologies.	NO: **'General' Exam. GLs** cover broad principles for examination, including emerging technologies.	NO: **'Manual 2019 (Chapter 6)'**, covering computer-related technologies, has not yet been updated. But in the future, YES.	YES: GLs relating to CS or computer program were updated and supplemented by annexes dealing with eligibility, patentability, and description requirements.

Any progress or development <Q8-Q11>	NO: (But it is planned to include AI-related examples in the GLs.)	YES: All past discussions, including the one with ERIA, are streamlined to amend GLs.	YES: (But ICT-CII GLs should be further upgraded/ updated.)	NO: No further developments yet.	NO: No developments yet.	YES: Annexes I and II are completed to supplement and enrich the GLs.

Table 7.2. Availability of Patent Examination Guidelines (GLs)/Emerging Technology–focused Examination GLs

	BN	KH	LA	MM
Discussions accelerated, triggered by the first ERIA research <Q2> Availability of patent exam. guidelines <Q3>	YES: BruIPO has come to realise the importance of patent exam. GLs since the last ERIA discussions. But BruIPO does not have patent exam. GLs, for it only conducts preliminary examination and forwards patent applications to other IP office for substantive examination.	NO: No own exam. GLs are available DIP/MISTI only conducts formality examination. The office then recognises the result of substantive examination by other cooperative IP office(s).	NO: Laos DIP does not have patent exam. GLs, for it only conducts formality examination and forwards patent applications to other IP office for substantive examination.	NO: Patent exam. GLs are not yet available because Myanmar Patent Law No.7/2019 has not entered into force.
Emerging technologies-focused patent examination guidelines, such as ICT, CS, or IoT <Q5-Q6>				
Any progress or development <Q8-Q11>	NO: (However, discussions on when to start substantive examination has been carried out.)	NO:	NO:	NO:

Table 7.3. Working Manuals/Concrete Examples in GLs/Number of AI or CS Applications Received/Difficulty Facing

	ID	MY	PH	SG	TH	VN
Working manuals <Q9>	NO:	NO: All manuals we had are now consolidated in the amended GLs.	YES: Need to concentrate on updates for ICT-CII GLs	YES:	NO:	NO:
Concrete examples in GLs <Q10>	NO: But planning to include examples relation to AI in GLs.	NO: Examples are later to be included in the amended GLs.	YES: Updates include addition of new examples on IoT and AI as well.	NO: No plans to include examples.	NO: In future GLs, we may include examples.	YES: In newly established annexes, concrete examples are included.
Number of AI/IoT applications received so far <Q13-1>	242 files (123 examined)	9 files (2020–2022) (5 examined)	109 files (109 examined)	390 files	88 files (2006–present) (39 examined)	160 files (147 examined)
	The numbers are indicated as of the date of the research Q&A.					

NOTE: Number for VN: 160 is simple addition of G06N3 (83), G06N5 (21), G06N20 (56) which may include some duplications.

Any difficulties being faced **<Q6, Q13-3>**	Description requirement is difficult due to lack of knowledge about fundamental characteristics and nature of such technologies.	Lack of knowledge base and experience dealing with such technologies (thus, unfamiliarity) in addition to lack of human resources. **ERIA Research is very helpful to step forward.**	Lack of specific task team in charge of Patent Exam. GLs unlike the JPO. **Gain insights on the new technologies through ERIA Research and its discussions.**	Challenge to catching up with technical knowledge, for the emerging technologies span across a broad range of technical fields.	Lack of expertise and knowledge on such technologies, which ends up with present GLs without enough details. **ERIA Research is helpful to comprehend whole picture in this regard.**	Lack of AI knowledge base and unfamiliarity with technologies. Lack of comprehensive GLs Lack of human resources specialised in such technologies and processing time.

Table 7.4. Working Manuals/Concrete Examples in GLs/Number of AI or CS Applications Received/Difficulties Being Faced

	BN	KH	LA	MM
	Presently, patent examination guidelines are not yet available.			
Working manuals <Q9>	NO:	NO:	NO:	NO:
Concrete examples in guidelines <Q10>	N/A:	N/A:	N/A:	N/A:
Number of AI/CS applications received so far <Q13-1>	N/A:	5 files (4 examined) NOTE: substantive examinations were done by other IP offices.	N/A:	N/A:
Any difficulty facing < Q6, Q13-3>	N/A:	N/A:	N/A:	N/A:

BN = Brunei Darussalam, KH = Cambodia, IP = intellectual property, LA = Lao PDR, MM = Myanmar.

Table 7.5. Legal Basis for Patentability and Description Requirements <Q1>

	ID	MY	PH	SG	TH	VN
Legal Basis	- Patent Law 13/2016	- Patent Act 2022	- Republic Act No. 8293 Intellectual Property Code	- Patent Act 2020 Revised Version	- Thai Patent Act - Manual of Petty Patent and Patent Application Examination 2019: 'Manual 2019'	- Law of Intellectual Property No. 07/2022QH15
Patent Eligibility	Art. 1(2): Definition Art. 4: Non-invention	Sec. 11: Patentable Invention Sec. 12: Meaning of '' 'invention'	Sec. 21: Patentable Inventions Sec. 22: Non-patentable Inventions	Sec. 13(1): Subject matter of patent application must be for an invention, for this section contains the word 'invention'.	Act Sec. 3(3), (4) Manual Chapter 1, Part 1, Items 2-4, 9-24	Art. 59: Subject matters not protected as inventions under the Law
Novelty	Art. 5(1):	Sec.14	Sec. 23	Sec. 13(1)(a) Sec. 14	Act Sec. 6(4) Manual Chapter 1, Part 1, Item 3	Art. 60

Inventive Step	Art. 7	Sec.15	Sec. 26	Sec. 13(1)(b) Sec. 15	Act Sec. 7 Manual Chapter 1, Part 1, Item 3	Art. 61
Description Requirements	Art. 25(3)	Patents Regulations 1986 Reg. 12	Sec. 35	Sec. 25(4) Sec.25(5)	Act Sec. 17 Manual Chapter 1, Part 1, Items 5-8	Art. 102

Table 7.6. Legal Basis for Patentability and Description Requirements <Q1>

	BN	KH	LA	MM
	Presently, patent examination guidelines are not yet available.			
Legal Basis	- Patents Order 2011 - Patent Rules	- Patent Law	- IP Law (Revised) No.38/NA, 2017	- Patent Law 2019
Patent Eligibility	Sec. 13	Art. 5	Art. 56	Sec. 13
Novelty	Sec. 14	Art. 6	Art. 13	Sec. 13(a)
Inventive Step	Sec. 15	Art. 7	Art. 13	Sec. 13(b)
Description Requirements	Rule 22 of Patent Rules	Art. 18	Art. 13 and Ministerial Decision on Patent and Petty Patent No. 1714 2020	Sec. 22(a)

BN = Brunei Darussalam, KH = Cambodia, LA = Lao PDR, MM = Myanmar.

2. ASEAN at a Glance (Case Example 1)

Table 7.7. Assessment of JPO's Case Example 1 … "Novelty" <Q14-Q16>

ID Agree	In relevant laws and regulations in Indonesia, there is no explicit mention of 'combination' or 'sub-combination' claim. However, DGIP understands the concept of such circumstances of the invention and its growing importance with the backdrop of emerging technologies. DGIP considers that JPO's reasonings and explanation given in Case Example 1 are well convincing despite the fact that Indonesia mentioned above. Thus, **DGIP agrees with JPO's observation and would decide that Claim 1 of Case Example 1 is anticipated by the prior art and Claim 2 is novel applying Article 5(1) of our Patent Law 12/2016.**
MY Agree	**MyIPO agrees with the JPO and would apply the same or similar argument of the JPO to an invention that is claimed in the form of 'sub-combination claim.'** MyIPO would, therefore, reject the claimed invention under Section 14 of the Patent Acts of Malaysia 1983 (amended 2022) due to lack of novelty.
PH Agree	**IPOPHIL agrees with the JPO and would conclude that the application in question should be rejected due to lack of novelty given Section 23 of the IP Code of the Philippines.** By utilising the concept of 'combination claim' or 'sub-combination claim,' IPOPHIL uses the JPO's case example concerning a robot apparatus in IPOPHIL's ICT-CII Guidelines. IPOPHIL, however, observes that the terminology used in its Manual for Patent Examination Practice to refer to such conditions differs from the one used by the JPO, i.e. 'combination claim' or 'sub-combination claim'.

SG Disagree	IPOS shares a view with the JPO in understanding that a claim to an entity (an apparatus or a product) may seek to define the invention by reference to features comprised in another entity that is not part of the claimed entity but related to it through use. IPOS, however, disagrees with the JPO's conclusion and considers that Claim 1 is novel. IPOS finds that the 'response information' of Claim 1 appears to be different from the 'response information' in the prior art, and the claimed robot apparatus may operate differently from the prior art, as the operation of the robotic apparatus is controlled based on the 'response information'. Logically, IPOS appears to consider that the 'control section storing a program' for the claimed robot apparatus may be distinct from that of the prior art, which conflicts with the JPO's explanation given in Case Example 1 that 'the source of the response information does not make any difference in the program itself of the robot apparatus, and does not serve to specify a structure, a function, etc. of the robot apparatus'.

Table 7.8. Assessment of JPO's Case Example 1 ... 'Novelty' <Q14-Q16>

TH Agree	**DIP agrees with the principle or the way of understanding 'combination' and 'sub-combination' claims explained by the JPO.** Although we have never experienced the claims expressed in such a way in patent applications, **DIP would agree with JPO's observation concerning the lack of novelty in Claim 1 of Case Example 1.**
VN Agree	**IP Viet Nam agrees with the JPO, which concluded that Claim 1 is not considered novel.** We issue an office action to the applicant. In 2023, IP Viet Nam, after much effort, significantly improved its patent examination guidelines and added Annexes for the patentability of computer software/program-related inventions. 'Combination/sub-combination claim' is the concept newly introduced to our Patent Examination Guidelines, specifically in Annex II to the Guidelines (Annex I to the Guidelines focuses on the eligibility of patents, and Annex II deals with other patentability requirements, i.e. novelty, inventive step, and description requirements.).
BN	N/A:
KH	N/A:
LA Disagree	**The Lao PDR IP Department has a different view from the JPO and observes that Case Example 1 meets the novelty requirement.** The department, however, shares a view with the JPO concerning the concept of 'combination claim' and 'sub-combination claim,' for both elements work together and then create a new usage or useful method referred to as IoT may be considered novel.

MM Disagree	The Myanmar IP Department has a different view from the JPO. We would conclude that the invention would satisfy the novelty requirement, for the claimed subject matter is not considered a simple combination of two things, which appears that certain technical matters are involved.

3. ASEAN at a Glance (Case Example 2)

Table. 7.9. Assessment of JPO's Case Example 2 … 'Description Requirements' <Q17-Q21>

ID Agree	**DGIP has the same view as the JPO that the office principally requires working examples, not prophetic examples, except certain particular circumstances** (e.g. cases where the claimed invention is a common general technical knowledge). As the JPO points out, DGIP requires that the description clearly and realistically disclose concrete embodiments of the invention supported by the 'facts' of the claimed invention. Thus, DGIP would invite the applicant due to the 'insufficiency' of the disclosure, expecting to provide more information in supporting the purported disclosure.
MY Agree	**MyIPO agrees with the JPO that the office would object to Case Example 2 for lack of clarity or insufficient disclosure under Regulations 12(1)(C) and 13.** Regulations 12 and 13 of Patents Regulations 1986 provide that the invention's disclosure should be made sufficiently clearer and complete for the invention to be evaluated unless the claimed invention is common general technical knowledge.
PH Agree	**IPOPHIL agrees with the JPO and would refuse the application since there is no clear disclosure of examples or embodiment that would satisfy the enablement requirement (Rule 406/406.1** of the Revised Implementing Rules and Regulations (IRR). Even though there are no specific provisions to deal with the sufficiency of the disclosure concerning AI-related technologies, IPOPHIL would apply the general rules for the enablement requirement (Section 35 of the IP Code or Rule 406.1 of the Revised IRR).

SG Agree	**IPOS agrees with the JPO and would require the applicant to meet the enablement requirement that the use is supported by credible evidence, which could include the provision of data** (Examination Guidelines, Paragraph 8.132–8.137). IPOS considers that the specification of Case Example 2 may not disclose the invention in a clear and complete manner for the invention to be performed by the person skilled in the art. IPOS would also determine whether a specification meets the sufficiency requirement by applying the broad principle to specific facts of each specification (Section 25(4) of the Singapore Patents Act (2020 Revised Edition) (SPA). The Examination Guidelines provide guidance on the sufficiency of disclosure to the applicant (Chapter 5, Part F, Sufficiency of Disclosure).

Table 7.10. Assessment of JPO's Case Example 2 … 'Description Requirements' <Q17-Q21>

TH Agree	**DIP agrees with the JPO and concludes that the description of Case Example 2 does not provide a clear and sufficient disclosure in light of Section 27 of the Thai Patent Act and Chapter 1, Part 1, Item 5 of DIP's Patent Examination Guidelines.** Chapter 1, Part 1, Item 5 of DIP's Patent Examination Guidelines says that 'the description must disclose the invention in a complete, concise and clear manner, which will allow a person skilled in the art related to an invention can be made and acted according to that invention'. Due to this general principle, the enablement requirement should be applied to any case, even if the claimed invention is a common general technical knowledge.
VN Agree	**IP Viet Nam shares a view with the JPO and would consider that the description of Case Example 2 does not meet the standard of enablement requirement.** IP Viet Nam does not envisage exception to the enablement requirement in all situations, even if the claimed invention is a common general technical knowledge. This office considers the results of examples or embodiments would not be replaced by the presumption of the trained data to support the claimed invention.

BN	N/A:
KH	N/A:
LA Agree	**The Laos IP Department agrees with the enablement requirement presented by the JPO.** The Department would consider that the embodiments and experiments may be required for any invention. The applicant should not enjoy exemptions from describing any results or data of a physical experiment. Thus, **we share a view with the JPO and conclude that the description of Case Example 2 does not provide a clear and sufficient disclosure**.
MM Agree	**The Myanmar IP Department agrees with the JPO and considers that the description for Case Example 2 is not disclosed by any embodiments supporting the facts of the claimed invention.** Myanmar Patent Law Section 22(a) provides a sufficient disclosure of the invention and should be applied to all inventions of any kind.

4. ASEAN at a Glance (Case Example 3)

Table 7.11. Assessment of JPO's Case Example 3 ... 'Patent Eligibility' <Q21-Q24>

ID Agree	DGIP agrees with the JPO as our Patent Law 13/2016 (Article 4[e]) stipulates that an invention shall exclude 'presentation of information'. This office considers that excluded 'presentation of information' refers to the presentation of information without specifying the use of any technical matters for presenting such information. We believe that the provision that provides 'presenting information' is very much aligned with the one in Japan. So, a similar argument will be applied to Case Example 3.
MY Agree	MyIPO agrees with the JPO and does not regard Claims 1 and 2 as an invention under Section 13(1) of the Patents Act of Malaysia 1983 (Act 291), last amendment 2022 (Act A1649). MyIPO does have the 'list of exclusions' specifying unpatentable inventions; 'mere presentation of information' is not included in the list. MyIPO would decide the Claims 1 and 2 are not subject matters for an 'invention' and thus rejected due to the reasoning that they have no technical features under Regulation 13(5).
PH Agree	IPOPHIL has the same view presented by the JPO. Except for Claim 3, the office would refuse the application since the claimed subject matter is considered an abstract idea because it does not involve any technical character in presenting the information. The wording 'mere presentation of information' is not included in the list of exclusions provided for in Section 22 and Rule 202 (non-patentable inventions). However, our Manual for Patent Examination Practice (MPEP) provides a more detailed explanation of 'mere presentation of information' as an abstract idea so that it is considered non-patentable (Rule 202[b]).

SG Agree	**IPOS shares a view with the JPO and would conclude that Claims 1 and 2 do not fall under the category of 'invention.'** IPOS's Examination Guidelines provide some guidance as to what are not considered to be inventions, such as mathematical methods, 'presentation of information per se', etc. 'Presentation of information' may be any claimed subject matter, characterised solely by the content of the information or an invention if the actual contribution lies solely in the presentation of information (Paragraph 8.34, Examination Guidelines).

7.12. Assessment of JPO's Case Example 3 … 'Patent Eligibility' <Q21-Q24>

TH Agree	**DIP shares a view with the JPO. As the JPO concludes, we would also conclude that the 'presentation of the data' in Claims 1 and 2 is 'unpatentable invention' under Section 9(2) of the Thai Patent Act.** In light of Section 9(2) of the Thai Patent Act, the 'presentation of data' is considered 'unpatentable inventions', even though the wording 'presentation of data' is not used in the law.
VN Agree	**IP Viet Nam agrees with the JPO, and office actions may be issued as the JPO would do, wherein Claims 1 and 2 would be rejected as unpatentable subject matter under Article 59 of the IP Law.** Article 59 of the IP Law stipulates the list of 'unpatentable inventions' or 'subject matters not protected as inventions' and does include 'presentation of information' under item 3.
BN	N/A:

KH	N/A: For reference, 'unpatentable inventions' are provided for in Articles 4 and 9 of the Patent Law.
LA Agree	The Lao PDR IP Department agrees with the JPO that the 'presentation of information' is not patentable under Article 21 of the Revised IP Law. Although no 'list of exclusion' for unpatentable invention is provided for in Lao's IP laws, we would apply the same reasoning for further office actions as the JPO does for the 'presentation of information'.
MM Agree	The Myanmar IP Department agrees with the JPO and considers that the 'presentation of information' is not patentable. Patent Law Section 14 (a)(ii) shows unpatentable inventions are not included as a 'presentation of information'. However, we consider that 'presentation of information' should be regarded as 'schemes', listed as unpatentable subject matters.

Chapter 8

Results of the Research (Each ASEAN State's Observations)

This chapter illustrates for each state what assessment of patentability and description requirements each ASEAN IP office showed and what thoughts led to such assessment concerning the three case examples presented by the JPO. Note that reporting each state's patentability assessment starts with the six states with examination guidelines in writing, followed by the four states whose examination guidelines are under development, considering the convenience of practical reference.

Also, note that the laws and regulations cited in the report are included for readers' reference in a possible range focusing on available English originals or English translations. Furthermore, as for the laws, regulations, and guidelines whose English versions were unavailable, the JPO, Japan External Trade Organization, etc. have translated those laws, regulations, etc., in the original languages into Japanese. Thus, the research was conducted with reference to the provisions in Japanese that were publicly available. The report omits the reproduction of these laws, regulations, etc., in Japanese.

States that already have examination guidelines in writing

- ID: DGIP – Indonesia Directorate General of Intellectual Property
- MY: MyIPO – Intellectual Property Corporation of Malaysia
- PH: IPOPHIL – Intellectual Property Office of the Philippines
- SG: IPOS – Intellectual Property Office of Singapore
- TH: DIP – Thailand Department of Intellectual Property
- VN: IP Viet Nam – Intellectual Property Office of Viet Nam

States whose examination guidelines are under development or under consideration towards the substantive examination to be carried out by the state in the future

- BN: BruIPO – Brunei Darussalam Intellectual Property Office
- KH: DIP/MISTI – Department of Industrial Property of Cambodia
  Ministry of Industry, Science, Technology and Innovation
- LA: Lao DIP – Laos IP Department

- **MM:** Myanmar IP Department

1. ID: DGIP – Indonesia Directorate General of Intellectual Property

1.1. ID: Section 1

Based on the response of the Republic of Indonesia's Directorate General of Intellectual Property (DGIP) to the questionnaire distributed in advance, the status of development of intellectual property laws, patent examination guidelines, etc., relating to the examination of emerging technology–related inventions, and how to proceed with the examination of emerging technology–related inventions in the Republic of Indonesia are summarised below.

1) Status of development of patent law and patent examination guidelines, etc., relating to the examination of emerging technology–related inventions

1.1) Patent law

The Republic of Indonesia has the independent Law Concerning Patents (Law of the Republic of Indonesia No. 13 of 2016, on Patents), which has provisions on patents and simple patents. According to the response to Q1 on what patent laws or regulations are the grounds for patent eligibility, novelty, inventive step, and description requirements in Indonesia, Articles 1(2) and 4 of the patent law are provisions related to the patent eligibility of emerging technology– or AI-related inventions and require particular attention. 'Definition' in Article 1 of the Patent Law includes definitions of 'patent', 'invention', and 'patent examiner'. In addition, Article 2 of the patent law stipulates that patent protection includes patents and simple patents. The patent law also stipulates that 'an invention' is 'an inventor's idea that is poured into a specific problem-solving activity in the field of technology in the form of a product or process, or the improvement and development of a product or process'. (Article 1[2]).

On the other hand, in addition to the above general provision (Article 1), a provision defines 'a non-invention' (Article 4). Paragraph (c) of Article 4 lists 'rules and methods for performing activities involving mental activities, games, and business'. Paragraph (d) thereof lists 'rules and methods that contain only computer programs'; and paragraph (e) lists 'presentation of information'.

Furthermore, separate from the provision on exclusion from 'invention' (Article 4) is a provision on inventions that are not patentable (so-called unpatentable grounds) (Article 9). Paragraph (c) lists 'theories and methods in science and mathematics'.

A patent not limited to emerging technology–related inventions is granted for a new invention, contains inventive steps, and is industrially applicable (Article 3 (1)). In contrast, 'Patents as referred to in Article 2(a) are granted for inventions that are new, contain inventive steps, and can be applied in industry' (Article 3 [2]), which includes an invention of a process. Further, the inventive step is excluded from the requirements for simple patents. In addition, the industrial applicability is defined only in Article 8, which stipulates that 'A simple patent as referred to in Article 2(b) shall be granted for any new Invention, development of an existing product or process, and can be applied in industry'. No provision is considered to help understand the extent or the intention of 'industry'.

Further, according to the response to Q1, Chapter II of the Patent Law, 'Scope of Patent Protection', provides for patent requirements (novelty and inventive step). Article 5 defines the requirement for novelty. Section (1) stipulates that 'An invention shall be deemed new as referred to in Article 3(1) if, as of the filing date, it is not the same as any previously disclosed technology'. Section (2) stipulates that the previously disclosed technology, as referred to in (1), is a technology that has been announced in or outside Indonesia in writing, oral description, or through demonstration, use, or in any other way that enables an expert to carry out the Invention before the date of acceptance; or the priority date in the case of an application filed with priority rights. Further, Article 7 defines the requirement for the inventive step. Section (1) provides that 'An Invention contains an inventive step if the invention would be unforeseeable to a person skilled in engineering.'

In addition, according to the response to Q1, Chapter III, 'Patent Application' of the patent law, provides description requirements on claims and the description (detailed explanation) of an invention (Article 25). Item (1) stipulates matters to be described in the application; item (2) stipulates documents to be attached to the application; item (3) stipulates the enablement requirement; and item (4) stipulates the clarity and support requirements. Then, Article 25(3) provides that 'The description of the Invention as referred to in (2)(b) must clearly and completely disclose how the Invention can be implemented by a person skilled in the field'.

Given the above, the provisions that are considered to be related to the eligibility for patent of emerging technology–related inventions are Articles 1(2); 4(c), (d), and (e); and 9(c). Article 1(2) requires that 'invention' be an idea to solve a problem in the technical field. The Patent Examination Guidelines on 'patentability' of the Republic of Indonesia, to be discussed later, provide a guideline for patent eligibility based on this provision.

1.2) Examination guidelines, working manuals, handbook, etc., relating to the examination of emerging technology–related inventions

Regarding Q2 on whether the office came to understand the necessity of the patent examination guidelines on emerging technology–related inventions and facilitated formulating the guidelines with the ERIA Research 2019–2020 (hereafter referred to as the 'first phase') as an impetus, DGIP responded 'Yes' on the understanding of the necessity, while 'No' to facilitate the formulation. Further, regarding Q3 on whether the examination guidelines of your office are already available in the form of a document (either on paper or electronically), DGIP responded 'Yes'. Regarding Q4 on whether the guidelines include the major elements of patentability (i.e. patent eligibility, novelty, and inventive step) and description requirements, DGIP responded that 'The guideline has all the criteria as below: Eligibility, Novelty and Inventive Step, and Description Requirements'. On whether the discussions have been carried out in the office or nationwide to deliberate further on how the patent examination should be conducted for emerging technologies and AI-related inventions (Q5), DGIP responded 'No'. Furthermore, on whether the patent examination guidelines are publicly available in English (Q7), DGIP responded that 'the guidelines are publicly available only in the Indonesian language'. In response to the questionnaire of the first phase, DGIP responded that the Patent Examination Guidelines on 'patentability' of the Republic of Indonesia are available only in Indonesian and are not open to the public. However, considering the response to Q7, the above examination guidelines have been open to the public since then. Note that the gist of the above examination guidelines is described in the ERIA Research 2019–2020 report.

Further, regarding Q8, on the development or preparation status of the examination guidelines after the first phase, and Q9, on the progress in facilitating working manuals or handbooks, DGIP responded as follows, respectively.

> 'We have not yet started any formal discussions regarding AI-related inventions. We are still in the process of improving examination skills on the existing CS and BM technologies, and of maintaining the existing CS and BM guidelines which only cover "eligibility" and "patentability".
>
> 'No changes, same as previous answer in Q&A 2019. Reply from the DGIP for the ERIA Research 2019-2020: No working manuals or handbooks are yet ready for the benefit of daily operations. Since separate guidelines concerning AI and IoT are not yet available in the Office, the Office members work together by gathering their own technical expertise to deal with such AI-related applications. The members also have to learn a lot to cope with new matters'.

Thus, no particular progress is observed since the first phase.

Furthermore, regarding Q10 on whether the examination guidelines include (or should include in the future) concrete examples that would contribute to a better understanding of AI-related technologies and their patentability, DGIP responded that 'We are planning to include some examples related to AI in our guidelines since comprehension of such technologies is easier to achieve through observing concrete examples'.

2) How to proceed with the examination of emerging technology–related inventions

Regarding Q11 on whether there is any progress or change after the first phase with respect to how your office, in practice, deals with a patent application of AI-related invention, DGIP responded as follows:

> 'The examiner from the electronic group deals with such applications. As mentioned in the Research 2019-2020 answer, since the DGIP has no specific guidelines for AI technologies, the examination is usually carried out by considering examination reports produced by other patent office'.

Further, regarding Q12 on what is difficult (or required) to newly establish practical patent examination guidelines dedicated to assessing patentability and description requirements for emerging AI-related inventions, DGIP responded as follows.

> 'Since AI is emerging technology, we are not too familiar with the technology itself, so we need basic training regarding AI/IoT. We need to understand the characteristics and nature of AI/IoT, before we can establish the guidelines. In addition to the above-mentioned technical issues, this office needs human resources to improve overall capability for dealing with the emerging technologies. Presently, patent examiners have to cope with such advanced examination on top of their daily examination operations'.

Regarding Q13-1 on the number of the AI/IoT applications received so far (or by year) and the number of such applications that the office has (had) started/finished examining, DGIP responded as follows:

> 'Number of AI/IoT applications received so far: 242 Applications; Number of such applications in process (processed): 123 Applications'.

Furthermore, regarding Q13-2 on the total number of staff members and the number of patent examiners (amongst them, the number of examiners who may deal with AI/IoT applications), DGIP responded as follows.

> 'Total number of staff members in Directorate of Patent: 229 people; Number of patent examiners: 113 examiners; Number of patent examiners in charge of AI-related inventions: 23 examiners'.

Moreover, regarding Q13-3 on whether this ERIA research helps draw DGIP's attention to future patent examination for emerging technologies and whether the office wishes to keep conducting this type of deliberations so that each ASEAN office would develop an own sense of assessing patentability for such new technologies, DGIP responded as follows:

> 'Since the technology is relatively new, we don't have sufficient knowledge about the fundamental characteristic and the nature of the technology, for instance, in the case of the description requirement. We found some difficulties in identifying whether the description provided by the applicant can enable the person skilled in the art to understand the invention. The office assumes that judgement of 'sufficiency' is rather hard to comprehend'.

1.2. ID: Section 2

Based on the responses of DGIP to the questionnaire distributed in advance and the results of on-site deliberations, DGIP's opinions on each of the three case examples prepared by the JPO are summarised below.

Case Example 1: Novelty

a) Conclusion: The DGIP agrees with the JPO's conclusion that Claim 1 lacks novelty and Claim 2 has novelty.

b) Explanation: The responses to Q14-1, Q15-1, and Q15-2 and DGIP's explanation on its deliberations on 31 January 2023 are summarised below.

Basically, DGIP's approach to the novelty of an invention according to a claim (referred to as 'sub-combination' by the JPO), including the description to specify the relation with another entity (that is not part of the claimed entity), is the same as that of the JPO.

For example, regarding Q14-1 on whether to agree with the way of claiming combination inventions, referred to as combination claims or sub-combination claims in light of the patent laws or regulations in Indonesia, DGIP responded that 'Basically in the prevailing laws and regulations in Indonesia, there is no explicit mention of combination claims and sub-combination claims. We can, however, understand the concept of combined claims and sub-combination claims by the explanations presented in 'case example 1.' We would

therefore agree with the idea'.

In addition, regarding Q15-1 on whether to agree with JPO's reasoning for the conclusion that Claim 1 of Case Example 1 lacks novelty, DGIP agrees with JPO's reasoning. Regarding Q15-2 on whether the DGIP would examine such an invention, which is claimed in the form of 'sub-combination claim' and then apply the same/similar argument of the JPO, the DGIP responded as follows.

> 'Basically, both the patent law as well as related ministerial regulations and our examination guidelines do not explain explicitly and in detail about sub-combination claims. The DGIP however considers that the explanation given in [Explanation] section of 'case example 1' is understandable and does not seem to be contradict Indonesia's rules, i.e., Article 5(1) of the Patent Law 13/2016 and the Examination Guidelines A-4.2.3.3'.

Further, regarding Q16 on the results or possible office actions after assessing the novelty if DGIP examines Case Example 1, DGIP responded as follows:

> 'Since the assessment of novelty is part of assessment of patentability, in case of patent application, we will assess the rest of patentability criteria, if the claimed invention is novel. Claim 1 of 'case example 1' is anticipated by the prior art and Claim 2 is novel. This result would be derived from Article 5(1) of Patent Law 13/2016 and A-4.2.3.3 of the Examination Guidelines'.

Note that Articles 3(1) Article 5(1) of the Patent Law (Law No. 13 of 2016) referred to in the responses to Q15-2 and Q16 state:

Article 3:

(1) Patents as referred to in Article 2(a) are granted for inventions that are new, contain inventive steps, and can be applied in industry.

Article 5

(1) An Invention shall be deemed new as referred to in Article 3(1) if as of the filing date, it is not the same as any previously disclosed technology.

Case Example 2: Description Requirements

a) Conclusion: The DGIP agrees with JPO's conclusion that the description does not provide a clear and sufficient disclosure to enable a person skilled in the art to carry out the invention as in Claim 1.

b) Explanation: The responses to Q17-1, Q17-3, Q18-1, Q18-2, Q19, Q19-1, Q19-2, Q19-3, Q20, and Q21 and DGIP's explanation on its deliberations on 31 January 2023 are summarised below.

The JPO gives, for example, the conclusion that 'the description only discloses that a trained model 'predicted' expected results of the invention to be enabled and established; however, the disclosure does not verify the accuracy of an estimation value by the trained model; and therefore, the description does not disclose any embodiments supporting the facts of the claimed invention'. Regarding Q18-1 requesting DGIP's opinions on the JPO's conclusion, DGIP's response is as follows:

> 'Agree. As the JPO points out, the DGIP also requires that the description should clearly and realistically disclose concrete embodiments of the invention supported by the "facts" of the claimed invention. This particularly needs to be applied to composition type of substances'.

Regarding Q18-2 on whether DGIP would apply the same/similar argument of the JPO and refuse the application due to an insufficient disclosure (that is, an estimation value by the trained model cannot be a substitute for the results of examples or embodiments to support the claimed invention), DGIP responded that 'The DGIP would apply similar argument of the JPO and issue an object to the applicant due to an insufficient disclosure'. From these responses, DGIP obviously agrees with JPO's thinking on Case Example 2.

Case Example 2 is used to contemplate the issue of how the invention is sufficiently disclosed by the evidence of embodiment, such as working examples or results of an experiment, in a case where the invention (typically pharmaceutical products) is of a kind that needs to be supported by data to meet the 'enablement requirement'. Q17-1 is on whether DGIP agrees with such an 'enablement requirement' in light of Indonesian patent laws and regulations. DGIP responded, 'Agree'.

Q17-3 is on whether there is an 'exemption' wherein the enablement requirement is satisfied even if no actual experimental data is shown in the description, and whether there is an 'exemption' if the claimed invention is a common general technical knowledge or if AI-related technologies furnish the claimed invention with estimated data or any other information required. In response to this question, DGIP replied:

> 'In case where the claimed invention is a common general technical knowledge: Applicant receives exemption from providing the description with any results or data of the physical experiment. In case where AI-related technologies furnish the claimed invention with estimated data or any other information required: we have not decided yet, since the

guidelines of AI are not yet formulated'.

Furthermore, regarding Q19 on the results or possible office actions, if DGIP examines Case Example 2 and assesses whether the claimed invention is disclosed sufficiently, DGIP responded as follows:

> 'If the DGIP gives an examination to this hypothetical "case example 2", we would likely issue an invitation to the applicant due to "insufficiency" of disclosure of the invention. We may request the applicant to provide more information with the office for supporting the disclosed subject matter as detail as possible, for all of the related elements shall be prescribed in the description. The basis of such invitation would be: - Article 25(3) Patent Law 13/2016 A patent application must disclose the invention in a manner sufficiently clear for it to be carried out by a person skilled in the art. - A-2.1.1.3 of the Guidelines The application is intended for "an expert," this means that the applicant is not required to enter further explanations that can be obtained from any textbook or well-known (Common General Knowledge)'.

Moreover, regarding Q19-1 on for what technical fields DGIP requires applicants to submit embodiments or results of an experiment for sufficient disclosure of the invention, DGIP responded that 'Possible fields of invention where the DGIP may probably issue an invitation to furnish further supplementary information on the disclosure would be: Chemicals, Pharmaceuticals, Biotechnologies or Materials informatics'.

Regarding Q19-2 on whether DGIP takes any measures to inform the applicant of such 'sufficient' presentation of data for enablement verification, DGIP responded: 'We would find it difficult to share such a concrete example as an instance of 'sufficient disclosure', for it may very much depend on cases. However, this office considers that even a hypothetical example would explain how the DGIP carries out the "sufficient disclosure" test in the patent examination'. It also provided a 'Supplementary Response' as described below. Further, regarding Q19-3 on whether DGIP receives any requests or even complaints by the applicant or parties concerned requesting that DGIP accept the AI-generated estimation data to satisfy the enablement issue, DGIP responded: 'As far as we are aware, we have never received any requests or complaints by the applicant concerning such matters'.

Concerning Q20 on what the laws, regulations, or patent examination guidelines would stipulate such exception of the 'enablement requirement,' DGIP responded that 'No "exemption of the enablement requirement" is stipulated in the patent law'.

Moreover, regarding Q21 on whether DGIP would envisage any possibility for your office to accept AI-generated data, such as the data produced by the estimation value of the trained model – instead of working examples or experimental results as those satisfying the enablement requirement – and if so, whether DGIP already has or will formulate any explicit rules or guidelines, DGIP responded as follows:

> 'We think it would be possible to accept AI-generated data instead of working examples. But, in practice, we need to establish some detailed rules to decide manners on how to submit such data to the office'.

Given these responses, AI-generated data, such as an estimation value of the trained model, may be accepted as satisfying the enablement requirement instead of working examples or experimental results.

DGIP also added 'Supplementary Response to Q19-2' as follows:

> 'Hypothetically, when this office examines the following claim directed to "composition for diabetic food", we may require the applicant to provide this office with the experimental data, so that it would help satisfy the "sufficient disclosure"'.

[Claim 1] *Food composition for diabetics, comprising lotus seed flakes 19-38 g, brown rice flakes 9.5-19 g, granulated sugar caramel 40 g, Arabic Gum 7 g, and low-fat skimmed milk 5 g, wherein ratio of the lotus seed flakes and the brown rice flakes is 1:1 or 2:1.*

The office further explains that:

> 'Then we expect the applicant to furnish the office with experimental data such as follows'.

Testing the activity of food composition uses experimental animals that were previously induced with Streptozotocin to develop diabetes. Antihyperglycemic, antihyperlipidemic and antioxidant activities of this food composition were compared to those given the drug metformin which is commonly given to patients with type 2 diabetes mellitus and compared to normal conditions (not induced by Streptozotocin). *The test was conducted by administering the diet orally once a day consecutively for 21 days after the mice developed diabetes. The food was given at the rate of 1 g/200g body weight of the experimental mice. Fasting blood glucose levels and body weight was measured weekly to see the effect of the feeding. After 21 days of feeding, blood lipid profile (including triglyceride, total cholesterol, LDL-cholesterol, and HDL-*

cholesterol), MDA level, serum SOD activity, and insulin level were measured.

Furthermore, mice were dissected to measure the weight of liver and kidney organs, pancreas was taken to make histological preparations and count the number of islets, atrophy and inflammation. The results showed that the 21-day intermittent feeding was able to reduce blood glucose, total cholesterol, serum triglycerides, and increase serum HDL, increase antioxidant work in the body, increase the number of islets, and restore inflammation in the pancreas due to diabetes.

Lastly, the DGIP states that 'In addition, for ensuring the sufficiency, we anticipate table regarding result of the testing such as follows'.

The experimental mice were divided into 6 groups, coded as N (normal), P1 (STZ-induced), P2 (STZ-induced given metformin), P3 (STZ-induced given food A), P4 (STZ-induced given food B) and P5 (STZ-induced given food C).

Table:

Total Islets, Atrophy, and Inflammation of the Pancreas Mouse Test

No.	Group Mice Test	Amount Islet	Atrophy	Inflammation
1	N group			
	1	14	-	+
	2	15	-	+
	3	17	-	+
	4	7	-	+
	5	14	-	+
	Average	13		
2	P1 group			
	1	0	+	++
	2	3	+	++
	3	2	+	++
	4	3	+	++
	5	2	+	++
	Average	2		
3	P2 group			
	1	13	-	+

No.	Group Mice Test	Amount Islet	Atrophy	Inflammation
	2	10	-	+
	3	4	+	+
	4	14	-	+
	5	3	+	+
	Average	8.8		
4	P3 group			
	1	3	+	+
	2	9	-	+
	3	10	-	+
	4	6	-	+
	5	7	-	+
	Average	7		
5	P4 group			
	1	21	-	+
	2	5	-	+
	3	9	-	+
	4	9	-	+
	5	3	+	+
	Average	9.4		
6	P5 group			
	1	20	-	+
	2	15	-	+
	3	6	-	+
	4	5	-	+
	5	12	-	+
	Average	11.6		

Case Example 3: Eligibility

a) Conclusion: The DGIP agrees with the JPO's decision that both the inventions, according to Claims 1 and 2, do not satisfy the patent eligibility while the invention, according to Claim 3, satisfies the patent eligibility.

b) Explanation: The responses to Q22-1, Q22-2, Q22-3, Q23-1, Q23-2, and Q24, and the explanation of DGIP on its discussion dated 31 January 2023 are summarised below.

Regarding Q22-1 on which provisions in Indonesia's Patent Laws, regulations, or examination guidelines expressly provide for 'unpatentable inventions,' DGIP responded that 'Article 4 of Patent Law 13/2016' is the one. Note that Article 4 of the Law excludes the following subject matters.

Article 4: Invention shall exclude:

(a) aesthetic creation;

(b) scheme;

(c) rules, and methods for performing any activities categorised as:

1. mental activity;
2. games; and
3. business,

(d) rules, and method only containing a computer program;

(e) presentation of information; and

(f) discovery in the following forms:

1. new use of existing and/or known products;
2. new form of an existing compound which no longer shows improvement in its profound efficacy and has a different chemical structure from known chemical structure of such compound.

Concerning Q22-2 on whether your office has a list of unpatentable inventions (list of exclusions), 'mere presentation of information' is included in the list, DGIP responded as follows:

> 'Yes. We have the "list of exclusion". The negative list of patentable inventions does include "mere presentation of information". Thus, "mere presentation of information" is not patentable'.

It is considered that this list of exclusion is in Article 4 of the Indonesian Patent Law, as shown in the response to Q22-1.

Further, regarding Q22-3 on the kinds of examples your office anticipates for such unpatentable 'presentation of information' based on the experiences of its patent examination practices, DGIP responded that 'Any subject matter that directed to only for presenting the information without specifying the use of any technical means for presenting information or in the other word it hasn't technical character'.

In addition, the JPO concludes that Claims 1 and 2 do not specify any means for or a method of presenting sugar content data of apples; both data do not have technical features in the presentation of information (presentation per se). Thus, the feature resides solely in the content of the information, and its main objective is to present information. Q23-1 asks for DGIP's view on the JPO's conclusion. DGIP's response is as follows.

> 'Agree: We think the provision that stipulates "presentation of information" in our office is very much aligned with the provision in the JPO regarding that matter, so we believe the similar argument will be applied to Case Example 3'.

Regarding Q23-2 that whether the DGIP would apply the same/similar argument of the JPO and refuse the application due to the fact that the claimed subject matter falls under the category of unpatentable 'mere presentation of information' if agree with the JPO's conclusion, the DGIP responds that "Yes: We would apply the same argument with the JPO and would refuse such applications"'.

Further, regarding Q24 on the results or possible office actions if the DGIP examines Case Example 3 and assesses the 'eligibility' of the claimed subject matter (also applicable provisions), DGIP responded that 'As provided for in Article 4(e) of the Patent Law 13/2016:
- we will communicate to the applicant that Claims 1 and 2 are excluded from the invention.
- As for Claim 3, we will establish the assessment of patentability'.

Given these responses, the difference between Japan's Patent Law and Indonesia's Patent Law causes a difference in the legal ground (the JPO's conclusion is based on the eligibility for a patent while DGIP's conclusion is based on the sorting to the list of unpatentable inventions (presentation of information), while JPO's opinion regarding Case Example 3 is roughly identical to DGIP's opinion. However, if the difference in the legal ground is more debatable than that of Case Example 3, we have to wait for further deliberations on whether the JPO and DGIP have differing conclusions.

(End of section for Indonesia)

2. MY: MyIPO – Intellectual Property Corporation of Malaysia

2.1. MY: Section 1

1) Status of development of patent law, examination guidelines, etc., relating to the examination of emerging technology–related inventions

1.1) Patents Act

Sections 11 and 12 of the Patents Act, patentability and the meaning of invention, respectively, are the most relevant sections concerning the examination of emerging technology–related inventions. Section 13 shows the list of non-patentable inventions. However, the list does not explicitly include computer programs or AI. Therefore, Section 13 does not immediately reject the patent eligibility for emerging technology–related inventions utilising computer programs or AI. Subsequently, those inventions are tested by Section 12 on the meaning of invention.

Since February 2023, MyIPO has enforced the 'Patent Examination Guidelines 2023', which includes emerging technology–related inventions (whose contents are described in detail in the next section).

1.2) Current situation research on examination guidelines, handbook, etc., relating to the examination of emerging technology–related inventions

Patent Examination Guidelines 2023 were issued in February 2023 (Q8). The guidelines are publicly available on the website (Q3) in English (not available in other languages such as Malay language). Compared to the old guidelines of 2011, the new 'Guidelines 2023' include new explanations for the examination of emerging technology–related inventions (AI, BM, CS, IoT) and are fulfilling (this is not limited to emerging technologies, but the Guidelines also provide detailed examination procedures in the entire substantive examination.)

'Part D Patentability' of the guidelines is the most relevant chapter in examining emerging technology–related inventions (for example, the three case examples of this research) (Q10). 'Mathematical Methods' (para 2.3.3) explains that whether a mathematical method makes a technical contribution be considered for judging eligibility (10 exemplary cases or inventions are provided). According to these inventions, patent eligibility is admitted as long as the technical contribution is found. 'Artificial Intelligence and Machine Learning' (2.3.3.1) explains the judgement when AI or ML is included in an invention. 'Simulation, Design, or Modeling' (2.3.3.2) explains how an invention is examined, which technically utilises computed simulation results from six viewpoints: (i) simulations interacting with the external physical reality, (ii) purely numerical simulations, (iii) specific technical implementation of a numerical simulation, (iv) intended technical use of the calculated numerical output data of a numerical simulation, (v) accuracy, and (vi) design processes. In

addition, the guidelines provide detailed explanations on examining inventions, such as mental activities, game rules, and business models, for which patent eligibility is not easy to determine. These inventions do not satisfy the patent eligibility. However, if those inventions consist of technical means, such as a computer or program, an examiner may not immediately judge that the invention does not satisfy patent eligibility, only because the invention is directed to the business model, for example.

The guidelines are very fulfilled to provide an organised, written way of thinking when an examiner conducts substantive examination because various emerging technology–related inventions (AI, business models, and IoT) appear and the number of applications is increasing. The guidelines are publicly available on the website, allowing the public to know the examiner's way of deciding on patentability well. The guidelines enable patent examiners or experts of each ASEAN IP office, companies and universities, and patent attorneys to easily understand the patent examination guidelines on emerging technology–related inventions.

The Patent Examination Guidelines of MyIPO are available through the 2D code on the right.

2) How to proceed with the examination of emerging technology–related inventions

Examiners in charge of electronic communications conduct examinations on emerging technology–related inventions at MyIPO. Their technical backgrounds are communications and computer or information technologies (Q11). MyIPO conducts substantive examinations, referring to examination results of other offices in the Patent Cooperation Treaty (PCT) application.

2.2. MY: Section 2

Based on the responses of MyIPO to the questionnaire and on-site interview, MyIPO's opinions on each of the three case examples prepared by the JPO and their assessment are summarised as follows.

Case Example 1: Novelty

a) Conclusion: MyIPO's conclusion is that Claim 1 of Case Example 1 lacks novelty (the same thinking as the JPO).

b) Explanation: When the responses to Q14-1, Q15-1, and Q15-2 and the opinion exchange with the examiners on 22 June 2023 are considered, MyIPO determined that Case Example 1 lacks novelty because the server brings no modification to the program of the robot. The program of the invention of Claim 1 of the present application is identical to that of Claim 1 of the cited document, which is the same reasoning as the JPO.

MyIPO's responses to the questionnaire show that MyIPO agrees with the JPO. Regarding the determination of novelty, MyIPO has the same point of view on sub-combination as the JPO. Regarding Q16 (what would be the results if MyIPO examines Case Example 1?), MyIPO responded that 'The claimed invention will be objected under Section 14 due to lack of novelty', which is the same examination results as the JPO.

About the determination of novelty, the examination result of MyIPO is the same as that of the JPO. However, during the discussion on Q14-1, MyIPO stated that the Examination Guidelines and other similar guidance in Malaysia do not have the terms 'combination claim' and 'sub-combination claim' in understanding an invention. Regarding the development of emerging technology, MyIPO stated that, in the technical fields of communications and networks, a combination like Case Example 1 is becoming more common than today. Many applications on a robot and a server, a peripheral device and a server, and others like Case Example 1 include an invention of a combination of two entities.

Case Example 2: Description Requirements

a) Conclusion: Agree with the JPO's way of thinking.

b) Explanation: The response to Q17-1 is 'Agree, because in Reg. 12(1)(c) requires the invention can be understood and, in a manner, sufficiently clear and complete for the invention to be evaluated'.

(Reference)

Regulation 12: Description.

(c) disclose the invention in such terms that it can be understood and in a manner sufficiently clear and complete for the invention to be evaluated and to be carried out by a person having ordinary skill in the art, and state any advantageous effects of the invention with reference to the background art.

The following responses were made to Q17-3. Concerning the first condition, 'In case where the claimed invention is a common general technical knowledge', the response is 'Yes'. The reason is that 'The claimed invention can be understood and in a manner sufficiently clearer and complete for the invention to be evaluated'. With respect to the second condition, 'In case where AI-related technologies furnish the claimed invention with estimated data or

any other information required', the response is 'No'. The reason is that 'If the claimed invention concerning AI-related technologies only furnishes the estimated data or any other information which is not considered either clear or sufficiently disclosing the invention, this case example 2 will be objected as lack of clarity, Reg. 12(1)(c) and Reg. 13(1)'.

(Reference)

> *Regulation 13*: *Claims.*
>
> *(1) The claims shall be clear and concise and fully supported by the description; and the number of the claims shall be reasonable taking into consideration the nature of the invention.*

For Q18-1, the response is that MyIPO 'agrees' with JPO's reasoning. The reason is that 'Since trained model only provides "predicted" expected results, there is a clarity issue with the accuracy of the actual result'. Regarding Q18-2, MyIPO 'agrees' similarly. The reason is that 'We would apply the same argument as the JPO and object to the application due to an insufficient disclosure of the invention'.

Concerning Q19, MyIPO responds that 'Regulation 12(1)(c) would be applied to the examination for "case example 2"'. On Q19-1, the response is, 'Typically, these inventions fall under chemicals, pharmaceuticals, alloy, or compositions. Refer to the Patent Examination Guideline, Part C, 6.3'. (This response includes almost the same fields as those mentioned in the question.) Regarding Q19-2 on the sufficient disclosure requirement, the response is as follows, copied from Part C, 6.3:

> 'Where the information given appears insufficient to enable a person skilled in the art to extend the teaching of the description to parts of the field claimed but not explicitly described by using routine methods of experimentation or analysis, the examiner should raise a reasoned objection, and invite the applicant to establish, by suitable response, that the invention can in fact, be readily applied on the basis of the information given over the whole field claimed or, failing this, to restrict the claim accordingly'. (Part C, 6.3)

Regarding the measures to inform applicants of sufficient disclosure, together with the Examination Guidelines, MyIPO informs applicants that 'The claim does not meet the requirement of Reg. 12(1)(c) because they are not fully supported by the description' through 'Adverse Substantive Examination Report'. Above are the responses to Q19.

MyIPO stated at the opinion exchange meeting that they made public explanations on disclosure requirements to IP practitioners during its training sessions for topics, such as drafting descriptions. Participants include patent attorneys and people from universities

and companies.

Regarding Q19-3, the response is that 'We have not experienced such situation yet'. Concerning Q20, the response is that 'No 'exemption of the enablement requirement' is stipulated in the patent law'.

With regard to Q21, the response is that 'At this moment, we do not envisage any possibility to accept AI-generated data instead of working examples or experimental results'. However, at the opinion exchange meeting, MyIPO stated that when it becomes common technical knowledge to rely on data generated by specific AI or in the specific field in the future, MyIPO may accept AI-generated data'.

Further, participants in the opinion exchange meeting, who are examiners on communications or computers, expressed that since the invention on the curing rate of an adhesive of Case Example 2 is examined by examiners in charge of chemicals. The participants do not have common technical knowledge that the control of the curing rate is difficult; it is difficult to make their own determination. If that point is the preposition described in the explanation of JPO's case example (it was common technical knowledge at the time of filing that the control of the curing rate was difficult), AI-generated data alone is not considered enough for describing an embodiment of the invention. This point was shared amongst MyIPO's participants in the opinion exchange meeting and the person in charge of the ERIA Research team.

Case Example 3: Eligibility

a) Conclusion: Agrees with JPO's way of thinking (identical).

b) Explanation: Regarding Q22-1, the response is that 'Section 13(1) of Patents Act of Malaysia 1983 (Act 291), last amendment 2022 (Act A1649) would be applied'. Regarding Q22-2, the response is, 'Although the MyIPO does have the "list of exclusions" which specify unpatentable inventions, however, "mere presentation of information" is not included in the list'.

Concerning Q23-1, the response is, 'Agree with the JPO's way of thinking. Claims 1 and 2 do not fall under "invention"'. Regarding Q23-2, the response is that 'The claimed subject matter will be objected as no technical features [Reg. 13(5)]'.

On Q24, the response is that 'The claimed subject matter will be objected as no technical features [Reg. 13(5)]'.

(Reference)

Regulation 13: *Claims.*

(5) The claims shall define the invention in terms of the technical features of the invention.

The following opinion exchange was made at the discussion. MyIPO raised a question on whether the claim will be accepted, if Claim 1 of Case Example 3 is amended as follows: 'An optical sugar content scanner … wherein data is collected and transmitted to a server'. MyIPO participants and the person in charge of the ERIA research shared that the amended claim has a technical characteristic and the invention has patent eligibility. The person in charge of the ERIA research raised the following question on Case Example 3 from another aspect about the previous Case Example 2 (the common technical knowledge at the time of filing should be considered). 'If you had examined this case example 30 years ago and had judged inventive step or the like, what judgement you would have made?' MyIPO's response is that this case example would have been rejected because the portable sugar content sensor, the network communication or similar devices were not technically available 30 years ago (the common technical knowledge at the time of filing). Technological advancement updates common technical knowledge along with history. For example, the portable phone was a new technology 20 years ago, but it is daily common technical knowledge today. As technologies are commonly accepted by society along with the progress of the history of technology, in parallel, the judgement of examiners on whether the description provides such disclosure to enable the invention to be carried out also change. This point was shared by the participants.

(Reference)

Section 13: *Non-patentable inventions.*

(1) Notwithstanding the fact that they may be inventions within the meaning of section 12, the following shall not be patentable:

(a) discoveries, scientific theories and mathematical methods;

(b) plant or animal varieties or essentially biological processes for the production of plants or animals, other than man-made living micro-organisms, micro-biological processes and the products of such micro-organism processes;

(c) schemes, rules or methods for doing business, performing purely mental acts or playing games;

(d) methods for the treatment of human or animal body by surgery or therapy, and diagnostic methods practised on the human or animal body:

Provided that this paragraph shall not apply to products used in any such methods.

(End of section for Malaysia)

3. PH: IPOPHIL – Intellectual Property Office of the Philippines

3.1. PH: Section 1

Summarised below are the responses of the Intellectual Property Office of the Philippines (IPOPHL) to the questionnaire distributed in advance regarding the status of development of the Intellectual Property Code, patent examination guidelines, etc., relating to the examination of emerging technology–related inventions, and how to proceed with the examination of emerging technology–related inventions in the Republic of the Philippines.

1) Status of development of the Intellectual Property Code, patent examination guidelines, etc., relating to the examination of emerging technology–related inventions

1.1) Intellectual Property Code

There is neither an independent patent law nor a utility model law in the Philippines. The Intellectual Property Code of the Philippines, which took effect on 4 March 2013 (Republic Act No. 8293 as amended by Republic Act No. 10372 of 2013, hereafter abbreviated as 'IP Code'), has provisions on patents and utility models. Part II, 'The Law on Patents', has provisions on patents (Sections 20 to 120), amongst which Chapter XII, 'Registration of Utility Models', provides for utility models (Sections 108 to 111). Further, the implementing regulations for intellectual properties (The Revised Implementing Rules and Regulations for Patents, Utility Models and Industrial Designs [hereafter, abbreviated as 'Rule']) went into effect on 1 August 2017. According to the response to Q1 on the grounds for patent eligibility, novelty, inventive step, and description requirements, Section 21 (Patentable Inventions), Section 22 (Non-patentable Inventions), Section 23 (Novelty), Section 26 (Inventive Step), and Section 35 (Disclosure and Description of the Invention) of the IP Code relate to the patent eligibility of emerging technology– or AI-related inventions and require particular attention.

The IP Code has no definition for 'invention', but the law has the relevant provisions, i.e. Section 21 on 'Patentability' and Rule 200 on 'Patentable Inventions' in Part II, Chapter 2 of the IP Code and its Rule, respectively. Both provisions state that 'Any technical solution of a problem in any field of human activity which is new, involves an inventive step and is industrially applicable shall be patentable'. It is interpreted that 'invention' is defined as any technical solution to a problem in any field of human activity'. Further, Rule 201 on 'Statutory Classes of Patentable Inventions' stipulates that a patentable invention may be or may relate to:

(a) A product, such as a machine, a device, an article of manufacture, a composition of matter, a microorganism;

(b) A process, such as a method of use, a method of manufacturing, a non-biological process, a microbiological process;

I Computer-related inventions; and

(d) An improvement of any of the foregoing.

Inversely, Section 22 on 'Non-patentable Inventions' of the IP Code lists:

22.1 Discoveries, scientific theories and mathematical methods, and in the case of drugs and medicines, the mere discovery of a new form or new property of a known substance which does not result in the enhancement of the known efficacy of that substance, or the mere discovery of any new property or new use for a known substance, or the mere use of a known process unless such known process results in a new product that employs at least one new reactant;

22.2 Schemes, rules and methods of performing mental acts, playing games or doing business, and programs for computers;

22.3 Methods for treatment of the human or animal body by surgery or therapy and diagnostic methods practiced on the human or animal body. This provision shall not apply to products and composition for use in any of these methods;

22.4 Plant varieties or animal breeds or essentially biological process for the production of plants or animals. This provision shall not apply to micro-organisms and non-biological and microbiological processes;

22.5 Aesthetic creations; and

22.6 Anything which is contrary to public order or morality.

Rule 202 'Non-Patentable Inventions'" stipulates in detail that the following shall be excluded from patent protection:

(a) Discoveries, scientific theories, and mathematical methods, a law of nature, a scientific truth, or knowledge as such;

(b) Abstract ideas or theories, fundamental concepts apart from the means or processes for carrying the concept to produce a technical effect;

(c) Schemes, rules, and methods of performing mental acts and playing games;

(d) Method of doing business, such as a method or system for transacting business without the technical means for carrying out the method or system;

(e) Programs for computers;

(f) Methods for treatment of the human or animal body by surgery or therapy and diagnostic methods practiced on the human or animal body (This provision shall not apply to products and compositions for use in any of these methods);

(g) Plant varieties or animal breeds or essentially biological process for the production of plants and animals (This provision shall not apply to microorganisms and non-biological and microbiological processes);

(h) Aesthetic creations; and

(i) Anything which is contrary to public order, health, welfare, or morality, or process for cloning or modifying the germ line genetic identity of humans or animals or uses of the human embryo.

These provisions and rules are related to the patent eligibility for emerging technology–related inventions.

Any technical solution to a problem in any field of human activity not limited to new emerging technology involves an inventive step and is industrially applicable and shall be patentable (Section 21 of the IP Code, Rule 200). An invention shall not be considered new if it forms part of a prior art (Section 23 of the IP Code). Further, an invention involves an inventive step if, having regard to prior art, it is not obvious to a person skilled in the art at the time of the filing date or priority date of the application claiming the invention (Section 26 of the IP Code, 26.1). Regarding industrial applicability, an invention that can be produced and used in any industry shall be industrially applicable (Section 27 of the IP Code, Rules 208 and 1402). The service industry is also included in the industry.

Section 35 of the IP Code, and Rules 405 and 1410.6 stipulate the description requirements for patent specifications (enablement requirement), while Section 36 and Rules 415 and 1410.7 are for claims (clarity and support requirements). Section 35 of the IP Code, 35.1 (Disclosure) states: 'The application shall disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. Where the application concerns a microbiological process or the product thereof and involves the use of a micro-organism which cannot be sufficiently disclosed in the application in such a way as to enable the invention to be carried out by a person skilled in the art, and such material is not available to the public, the application shall be supplemented by a deposit of such material with an international depository institution'.

1.2 Current situation research on examination guidelines, working manuals, handbook, etc., relating to the examination of emerging technology–related inventions

On Q2 – whether the office came to understand the necessity of the patent examination guidelines on emerging technology–related inventions and facilitated formulating the guidelines with the ERIA Research 2019–2020 (hereafter referred to as 'first phase') as an impetus – the IPOPHL responded 'Yes' and noted that 'This office has been working on making "separate" guidelines even before the ERIA 2019 discussions'. Regarding Q3 on whether the examination guidelines of your office are already available in the form of a

document (either on paper or electronically), the IPOPHL responded 'Yes.' On Q4 – whether the guidelines include the major elements of patentability (i.e. patent eligibility, novelty, and inventive step) and description requirements', the IPOPHL responded as follows.

> 'Yes. The "IPOPHL's general" guideline has all criteria as below: Eligibility, Novelty, and Inventive Step, Description Requirement'.

Regarding Q5 on whether the discussions have been carried out in the office or nationwide to deliberate further on how the patent examination should be conducted for the emerging technology– and AI-related inventions, the IPOPHL responded 'Yes'. In addition, regarding Q6 on the focal points of IPOPHL's discussions and the difficulties it has to overcome to properly accommodate patent applications of emerging technology– or AI-related inventions, the IPOPHL responded as follows.

> 'The discussions for technology-focused ("separate") guidelines for the emerging technologies, such as ICT and CII, have been carried out even before the ERIA Research 2019–2020. There are for effective patent examinations by patent examiners who handle ICT related applications. Against such a background, patentability of the patent application including the emerging technologies are examined in line with the Manual for Patent Examination Practice (MPEP), which serves as a guide for examiners under the IP Code'.

Further, regarding Q7 on whether the patent examination guidelines are publicly available in the local language and in English, the IPOPHL responded, 'No, the guidelines are publicly available only in English language'.

The patent examination guidelines for ICT and CII (hereafter abbreviated as 'ICT-CII Guidelines') in December 2022, mentioned in the responses to Q6 and Q7, are independent guidelines in ICT and CII and are publicly available only in English. The preface thereof states:

> 'These "Examination Guidelines for Information and Communications Technology patent applications" (hereinafter referred to as "ICT-CII Guidelines") are to assist Patent Examiners in the examination of patent applications for various inventions in the ICT field such as, but not limited to, information systems, communication systems, telecommunications, radio communications, computer implemented systems, software related systems, data mining systems, computer information networking systems, computer operating systems, embedded systems, data warehousing systems, network and data security systems, multimedia design systems, content delivery systems, digital broadcasting, graphic representation

> devices, website development platforms, application development platform, system development platforms, cloud computing infrastructure, ubiquitous computing frameworks, mobile computing systems, IoT infrastructure, virtual infrastructure, electronic commerce systems, electronic services systems, electronic workflow frameworks, object modelling systems, image or video processing systems, photonics systems, machine learning systems, AI systems, distributed systems, robotic systems, sensing devices, and big data modelling systems'.

These Examination Guidelines are related to examining emerging technology–related inventions, including IoT and AI.

Further, regarding Q8 on the development or preparation status of the examination guidelines after the first phase and Q9 on the progress in facilitating working manuals or handbooks, the IPOPHL responded as follows, respectively.

> 'Our present ICT-CII Guidelines were revised in December 2022 to provide more sample cases, as the JPO does, to cover on how to examine cases with IoT, AI and emerging technologies involving ICT as subject matter'.
>
> 'We believe there should be a separate guideline for IoT and AI patent examination. Meanwhile, we are considering to continuously update the present ICT-CII Guidelines and include more example/cases on IoT and AI, so that further guidance/decisiveness will be given to our examiners when examining IoT or AI patent applications'.

Regarding Q10 on whether the examination guidelines include (or should include) concrete examples that would contribute to a better understanding of AI-related technologies and their patentability, the IPOPHL responded as follows.

> 'The present ICT-CII guidelines have been updated recently and did include new examples relating to different fields of ICT including IoT and AI. The examples provide guidance on how ICT patent applications are examined in the light of the IP Code. Most of the examples are based on the examples as provided in the different Examination Guidelines of other IP Offices such as JPO, USPTO and EPO. The direction of our office is further upgrade/update the ICT-CII guidelines to include specific sections for AI'.

2) How to proceed with the examination of emerging technology–related inventions

Regarding Q11 on whether there is any progress or change after the first phase with respect to how your office, in practice, deals with a patent application of an AI-related invention, the IPOPHL responded as follows.

> 'Just like any other patent applications, AI and IoT applications were initially examined in terms of completeness and in accordance with the form. If all else are met, then the applications will undergo the substantive examination by the following divisions or teams. Electronics and Electrical Engineering Examination Division; and Electronics, Electrical, Communications and Computer Engineering, Information Technology'.

Further, regarding Q12 on what is difficult (or required) to newly establish practical patent examination guidelines dedicated to assessing patentability and description requirements for emerging AI-related inventions, the IPOPHL responded as follows.

> 'At the moment, our office does not have a unit which is responsible for a specific task to draft examination guidelines. As the JPO does, we need to establish a unit that is focused on formulating and updating examination guidelines, especially in the emerging technology fields including AI'.

Further, regarding Q13-1 on the number of the AI and/or IoT applications received so far (or by year) and the number of such applications that the office has (had) started/finished the examination of, the IPOPHL responded as follows.

> 'Number of AI/IoT applications received so far: 109; Number of such applications in process (processed): 109'.

Furthermore, regarding Q13-2 on the total number of staff members and patent examiners (amongst them, the number of examiners who may deal with AI/IoT applications), the IPOPHL responded as follows.

> 'Total number of staff members: 420; Number of patent examiners: 100; Number of patent examiners in charge of AI/IoT-related inventions: 16'.

Regarding Q13-3 on whether this ERIA Research helps draw IPOPHL's attention to future patent examination for emerging technologies and whether you wish to keep conducting this type of deliberations so that each ASEAN office would develop its sense of assessing patentability for such new technologies, the IPOPHL responded as follows.

> 'Yes. Through these ERIA discussions we are be able to gain insights on how AI/IoT patent applications are being examined on the international stage which makes our office improve its examination procedures by

adopting patent examination best practice. Discussions as such are helpful in promoting improvements in examination practice of participating offices, especially in the emerging patent examination fields like AI/IoT. These deliberations may also pave a way for establishing common examination practice among ASEAN patent offices. This office believes that this is beneficial for all ASEAN IP Offices'.

3.2. PH: Section 2

Based on the responses of the IPOPHL to the questionnaire distributed in advance and the results of on-site deliberations, the IPOPHL's opinions on each of the three case examples prepared by the JPO are summarised below.

Case Example 1: Novelty

a) **Conclusion:** The IPOPHL agrees with the JPO's conclusion that Claim 1 lacks novelty and Claim 2 has novelty.

b) **Explanation:** The responses to Q14-1, Q15-1, Q15-2, and Q16 and the IPOPHL's explanation on the deliberations at IPOPHL on 20 June 2023 are all considered and summarised below.

First, the major premise is that a claim, including a description to specify the relationship with another entity (not part of the claimed entity) (a claim of this type is called 'sub-combination' by the JPO), is allowed as one of the claim forms in the Philippines. For example, the Manual for Patent Examination Practice (MPEP) of the IPOPHL, Chapter III (Claim), Item 4.8a on claim, clarity, and interpretation of claims, has the following statement:

> 'Where a claim in respect of a physical entity (product, apparatus) seeks to define the invention by reference to features relating to the entity's use, a lack of clarity can result. This is particularly the case where the claim not only defines the entity itself but also specifies its relationship to a second entity which is not part of the claimed entity (for example, a cylinder head for an engine, where the former is defined by features of its location in the latter). Before considering a restriction to the combination of the two entities, it should always be remembered that the applicant is normally entitled to independent protection of the first entity per se, even if it was initially defined by its relationship to the second entity. Since the first entity can often be produced and marketed independently of the second entity, it will usually be possible to obtain independent protection by wording the

> claims appropriately (for example, by substituting "connectable" for "connected"). If it is not possible to give a clear definition of the first entity per se, then the claim should be directed to a combination of the first and second entities (for example, "engine with a cylinder head" or "engine comprising a cylinder head")'.

(The cylinder head is an example described in the Examination Guidelines of the EPO, Part F, Chapter IV.)

Further, we have to pay attention to Chapter IV, Patentability, 7. Test for Novelty, 7.6 of MPEP, which states, 'In determining novelty of the subject-matter of claims the examiner should have regard to the guidance given in III, 4.4 to 4.13'.

When the above points are regarded as the major premise, it is considered that the IPOPHL has the same approach to the novelty of an invention of a claim (sub-combination claim), including a description to specify the relationship with another entity as the JPO.

For example, regarding Q14-1 and Q15-1, the IPOPHL responded 'Agree'. The response to Q14-1 additionally states that 'Although the IPOPHL's terminology is different, we would agree with the condition expressed as 'combination' inventions which are referred to as 'combination claim' or 'sub-combination claim' based on the IPOPHL's ICT-CII guidelines'. The response to Q15-1 states that 'The IPOPHL uses the same approach used by the JPO'. Further, in response to Q16, it states that 'The said application would be rejected due to lacking novelty in view of Sec. 23 of the IPOPHL's IP Code'.

Further, the response to Q15-1 includes an additional statement that 'the IPOPHL does deployed the JPO's case example concerning a robot in our ICT-CII guidelines (Patent Examination Guidelines for Information Communications Technology and Computer Implemented Inventions; revised December 2022; expressed as "ICT-CII guidelines")'. In fact, Chapter 5, specifically 5.2 on Example of Invention of Sub-combination, of the ICT-CII Guidelines of the IPOPHL describes an illustrative example having almost the same contents as Case Example 1, wherein the conclusion on the novelty of Claims 1 and 2 are the same as that of Case Example 1. Then, the annotation 'JPO Examination Handbook/Guidelines on IoT-Related Technologies' is added to this illustrative example described in Chapter 5 (5.2) of the ICT-CII guidelines, explicitly indicating that this example is cited from JPO's Examination Handbook for Patent and Utility Model (Annex A, Case 35).

It should be noted that analyses for Claims 1 and 2 to derive the above conclusion in the ICT-CII guidelines of the IPOPHL additionally include explanations, which are absent in Case Example 1 and Case 35 of the JPO Handbook, Annex A. Specifically, the analysis for Claim 1 includes the following explanation.

> 'Identical response information, regardless of whether the said response information is received from the manufacturing facility through the server or from the server itself, does not make the control section change the operation of the robot apparatus. In simple word, the robot apparatus in Claim 1 cannot be considered patently distinct from the prior art by merely configuring that the response information is received by the control section from the manufacturing facility via server given that the features of the claimed robot apparatus remain unaltered by such configuration and is still anticipated by the prior art'.

The analysis for Claim 2 includes the following explanation.

> 'In view of such, the control section in Claim 2 controls operation of the claimed robot apparatus differently compared with the prior art since response information contains specific instruction to perform operations on the basis of the attribute information and the unique identification information of each of the said object specified by the said server. Therefore, the technical features of the robot apparatus in Claim 2 can be considered patently distinct from the prior art due to such specific instruction which makes the control section alter the operation of the robot apparatus in a manner different from the prior art'.

Case Example 2: Description Requirements

a) Conclusion: The IPOPHL agrees with the JPO's conclusion that the description does not provide a clear and sufficient disclosure to enable a person skilled in the art to carry out the invention as in Claim 1.

b) Explanation: The responses to Q17-1, Q17-3, Q18-1, Q18-2, Q19, Q19-1, Q19-2, Q19-3, Q20, and Q21 and IPOPHL's explanation on deliberations at the IPOPHL on 20 June 2023 are referred to and summarised below.

In relation to Q18, the JPO concludes that 'the description only discloses that a trained model 'predicted' expected results of the invention to be enabled and established; however, the disclosure does not verify the accuracy of an estimation value by the trained model; and therefore, the description does not disclose any embodiments supporting the facts of the claimed invention'.

Q18-1 asks IPOPHL's opinions on JPO's conclusion, to which the IPOPHL responded 'Agree'. Further, regarding Q18-2 on whether the IPOPHL would apply the same or similar argument of the JPO and refuse the application due to an insufficient disclosure (that is, an estimation value by the trained model cannot be a substitute for the results of examples or

embodiments to support the claimed invention), the IPOPHL responded as follows.

> The same argument of JPO can be applied in refusing the application under the PH Laws since there is no clear disclosure of examples or embodiments that would satisfy the requirement of enablement as required in Rule 406/406.1 of the Revised Implementing Rules and Regulations for Patents, Utility Models and Industrial Designs (hereafter, expressed as "Revised IRR")'.

From these responses, the IPOPHL obviously agrees with JPO's thinking on Case Example 2.

The JPO uses Case Example 2 to contemplate how the invention is sufficiently disclosed by the evidence of embodiment, such as working examples or results of an experiment, in a case where the invention (typically pharmaceutical products) is of a kind that needs to be supported by data to meet the 'enablement requirement'. Regarding Q17-1 on whether the IPOPHL agrees with such 'enablement requirement' in light of Philippine patent laws and regulations, the IPOPHL responded as follows.

> 'Although we agree the idea, there is no specific provisions to deal with the sufficiency of disclosure in relation to AI. However, the general rules (Sec. 35 of the IP Code or Rule 406.1 of the Revised IRR) requires that the disclosure must include one or more representative embodiments or working examples, a description of the result of the experimental test, and any involved activities. Enablement requires experimental representation or working examples. The assumption is that there is a possibility that the AI-generated data is not the representation of the physical experimental data, which a person skilled in the art can carry out'.

Q17-3 is on whether there is an 'exemption' wherein the enablement requirement is satisfied even if no actual experimental data is shown in the description. On whether there is 'exemption' if the claimed invention is a common general technical knowledge or if AI-related technologies furnish the claimed invention with estimated data or any other information required, IPOPHL response is as follows.

> 'No exemptions from providing results or data, as provided by Rule 405/406 of the Revised IRR. So, we think that the applicant should not enjoy exemption. If claimed invention is a common general technical knowledge, the enablement would be satisfied since a person skilled in the art would be able to carry out the invention. The enablement requirement would be satisfied as long as a person skilled in the art would be able to carry out the invention from

information provided'.

Regarding Q19 on the results or possible office actions if the IPOPHL examines Case Example 2 and assesses whether the claimed invention is disclosed sufficiently, the IPOPHL responded as follows.

> 'The claimed invention would be rejected for lacking enablement under Rule 405/406 of the Revised IRR since there is no clear disclosure on how the composition for an anaerobic adhesive was achieved'.

On Q19-1 – for what technical fields the IPOPHL requires applicants to submit embodiments or results of an experiment for sufficient disclosure of the invention – the IPOPHL responded that 'Rules 405, 406, and 406.1 of the Revised IRR require that the disclosure must contain a clear and detailed description of the invention using working examples, especially in the case of the chemical substance and pharmaceutical subject matter'.

Regarding Q19-2 on whether the IPOPHL takes any measures to inform the applicant of such 'sufficient' presentation of data for enablement verification, the IPOPHL responded as follows.

> 'Since the AI/IoT application received by the office are mostly PCT applications, majority of AI/IoT applications have sufficient disclosures because disclosure tests have been already carried out by other offices prior to filing corresponding applications at IPOPHL. The applicant is usually informed in both the formality and substantive examination phases whether the disclosure as filed lacks sufficiency of disclosure. The office also explains matters of sufficiency of disclosure through patent drafting trainings, workshops, and seminars conducted within and outside the office to aid applicants in filing patent applications. If the applicants are interested, they can always refer to the patent examination guidelines available on the IPOPHL's website'.

On Q19-3 – on whether the IPOPHL receives any requests or even complaints by the applicant or parties concerned requesting that the IPOPHL accept the AI-generated estimation data to satisfy the enablement issue – the IPOPHL responded, 'As of the moment, our office has not received any request or complaints of this nature'.

Regarding Q20 on what laws, regulations, or patent examination guidelines would stipulate such exception of the 'enablement requirement,' the IPOPHL identified 'Sec. 35 of the IP Code, together with Rule 405, 406 and 406.1 of the Revised IRR'.

Regarding Q21 on whether the IPOPHL would envisage any possibility for your office to accept AI-generated data, such as data produced by the estimation value of the trained model instead of working examples or experimental results as those satisfying the enablement requirement, and if so, whether the IPOPHL already has or will formulate any explicit rules or guidelines, the IPOPHL responded as follows.

> 'Yes, the office can possibly accept AI-generated data as way of presentation of information regarding examples as described by the invention, since the rate of technology changes involving trained model in AI/IoT is very fast. In the future, the IPOPHL may draft examination guidelines covering the possibility of taking credence to inventive aspect of data generated by AI related inventions'.

Given these responses, if the following conditions are satisfied, AI-generated estimation values are verified to be highly reliable that AI-generated data can be a substitute for actual experiments as it becomes common technical knowledge for those skilled in the art. In the Philippines, AI-generated data, such as an estimation value of the trained model, may be accepted as those satisfying the enablement requirement instead of working examples or experimental results.

Case Example 3: Eligibility

a) Conclusion: IPOPHL agrees with JPO's conclusion that the inventions of Claims 1 and 2 do not satisfy patent eligibility while the invention of Claim 3 satisfies the patent eligibility.

b) Explanation: IPOPHIL's responses to Q22-1, Q22-2, Q22-3, Q23-1, Q23-2, and Q24 and its explanation during the discussion on 20 June 2023 are summarised below.

Regarding Q22-1 on which provisions in your patent laws, regulations or examination guidelines in the Philippines expressly provide for 'unpatentable inventions,' the IPOPHL listed 'Sec. 22 of the IP Code/Rule 202 of the Revised IRR'. Sec. 22 of the IP Code and Rule 202 of the Revised IRR provide:

REPUBLIC ACT NO. 8293 (An Act Prescribing the Intellectual Property Code and Establishing the Intellectual Property Office, Providing for Its Powers and Functions, and for Other Purposes)

PART II. THE LAW ON PATENTS

Chapter II. PATENTABILITY

Sec. 22. Non-patentable Inventions. - The following shall be excluded from patent protection:

22.1. Discoveries, scientific theories, and mathematical methods, and in the case of drugs and medicines, the mere discovery of a new form or new property of a known

substance which does not result in the enhancement of the known efficacy of the substance, or the mere discovery of any new property or new use for a known substance, or the mere use of a known process unless such known process result in a new produce that employs at least one new reactant.

For the purpose of this clause, salts, esters, ethers, polymorphs, metabolites, pure form, particle size, isomers, mixtures of isomers, complexes, combinations, and other derivatives of a known substance shall be considered to be the same substance, unless they differ significantly in properties with regard to efficacy;

(As amended by Republic Act No. 9502 or the Universally Accessible Cheaper and Quality Medicines Act of 2008)

22.2. Schemes, rules, and methods of performing mental acts, playing games or doing business, and programs for computers;

22.3. Methods for treatment of the human or animal body by surgery or therapy and diagnostic methods practiced on the human or animal body. This provision shall not apply to products and compositions for use in any of these methods;

22.4. Plant varieties or animal breeds or essentially biological process for the production of plants and animals. This provision shall not apply to micro-organisms and non-biological and microbiological processes.

Provisions under this subsection shall not preclude Congress to consider the enactment of a law providing sui generis protection of plant varieties and animal breeds and a system of community intellectual rights protection;

22.5. Aesthetic creations; and

22.6. Anything which is contrary to public order or morality. (Sec. 8, R.A. No. 165a)

The Revised Implementing Rules and Regulations for Patents, Utility Models and Industrial Designs (The Revised IRR)

PART 2 PATENTABILITY

Rule 202. Non-patentable Inventions. - The following shall be excluded from patent protection:

*(a) Discoveries, scientific theories, and mathematical methods, a law of nature, a scientific truth, or knowledge as such; **

(b) Abstract ideas or theories, fundamental concepts apart from the means or processes for carrying the concept to produce a technical effect;

(c) Schemes, rules, and methods of performing mental acts and playing games;

(d) Method of doing business, such as a method or system for transacting business without the technical means for carrying out the method or system;

(e) Programs for computers;

(f) Methods for treatment of the human or animal body by surgery or therapy and diagnostic methods practiced on the human or animal body. This provision shall not apply to products and compositions for use in any of these methods;

(g) Plant varieties or animal breeds or essentially biological process for the production of plants and animals. This provision shall not apply to microorganisms and non-biological and microbiological processes;

(h) Aesthetic creations; and

(i) Anything which is contrary to public order, health, welfare, or morality, or process for cloning or modifying the germ line genetic identity of humans or animals or uses of the human embryo.

**In the case of drugs and medicines involving known substances, please refer to the Implementing Rules and Regulations of Republic Act 9502, otherwise known as the "Universally Accessible Cheaper and Quality Medicines Act of 2008'.*

Regarding Q22-2 on whether 'mere presentation of information' is included in the list of unpatentable inventions (list of exclusions), the IPOPHL responded as follows.

> 'The wording 'Mere Presentation of information' is not included in the list of exclusions provided for in Sec. 22/Rule 202 (non-patentable inventions). However, our Manual for Patent Examination Practice (MPEP) provides a more detailed explanation and defines 'mere presentation of information' as an abstract idea, so that it is considered non-patentable (Rule 202[b])'.

Certainly, MPEP's Chapter IV on Patentability, subsection 2.3 under 2. Invention, is entitled 'Presentations of Information' (note: this is not 'mere presentation of information'). Under the title, the following statement is found.

> 'Although there is no corresponding, explicit provision in the IP-code and the IRR, mere representation of information characterized solely by the content of the information will not usually be patentable since it cannot be considered as a technical solution to a problem. This applies whether the claim is directed to the presentation of the information per se (e.g. by acoustical signals, spoken words, visual displays), to information recorded on a carrier (e.g. books characterized by their subject), gramophone records characterized by the musical piece recorded, traffic signs characterized by the warning thereon, magnetic computer tapes characterized by the data or programs recorded), or to processes and apparatus for presenting information (e.g. indicators or recorders characterized solely by the information indicated or recorded). If, however, the presentation of information has new technical features there could be patentable subject-matter in the information carrier or in the process or apparatus for presenting the information. The arrangement or manner of representation, as distinguished from the information content, may well constitute a patentable technical feature. Examples in which such a technical feature may be present are: a telegraph apparatus or communication system characterized by the use of a particular code to represent the characters (e.g. pulse code modulation); a measuring instrument designed to produce a particular form of graph for representing the measured information; a gramophone record characterized by a particular groove form to allow stereo recordings; or a diapositive with a soundtrack arranged at the side of it'.

In view of the above, it is considered that the concept of 'mere presentation of information' is established in the Philippines.

On Q22-3 examples your office considers unpatentable 'presentation of information' based on the experiences of your patent examination practices the IPOPHL responded that 'Examples includes spoken words, visual displays, tradenames, data per se, and books characterized by their subject'.

In addition, the JPO concludes that both Claims 1 and 2 do not specify any means or method of presenting the sugar content data of apples. Both data do not have technical features in the presentation of information (presentation per se). Thus, the feature resides solely in the content of the information, and its main objective is to present information. On Q23-1, IPOPHL agreed with JPO's conclusion. Further, regarding Q23-2 on whether the IPOPHL would apply the same/similar argument of the JPO and refuse the application because the claimed subject matter falls under the category of unpatentable 'mere presentation of information', the IPOPHL responded as follows.

> 'The application would be refused since the claimed subject matter is considered to be an abstract idea because it does not involve any technical character in presenting the information. Furthermore, as per ICT-CII guidelines, the preamble (of the claim) is not directed to a product or a process within the meaning of patentable invention of the IP Code'.

Further, regarding Q24 on what the results or possible office actions would be if the IPOPHL examines Case Example 3 and assesses the 'eligibility' of the claimed subject matter (also, applicable provisions), the IPOPHL responded as follows.

> 'The claimed subject matter would be rejected based on Sec. 22 or Rule 202 of the Revised IRR for being an abstract idea. However, to proceed with the examination and expedite prosecution, the examiner would interpret the claims on the liberal assumption wherein the claims are drafted to include technical character in order to proceed with the examination on Novelty, Inventive Step, Industrial Applicability and sufficiency of disclosure, provided that the specification suggests involvement of technical components/hardware in presenting data. Otherwise, no merit examination on Novelty, Inventive Step, and Industrial Applicability shall be given'.

In view of these responses, Japan's Patent Law and the IP Code of the Philippines differ in the legal ground (JPO's judgement is based on the eligibility for patent while IPOPHL's is based on the sorting by the list of unpatentable inventions (abstract idea). Regarding Case Example 3, JPO's opinion is roughly identical to IPOPHL's opinion. However, in case the difference in the legal ground is more debatable than that of Case Example 3, we have to wait for further deliberations on whether a difference of conclusion between JPO's conclusion differs from that of IPOPHIL.

(End of section for the Philippines)

4. SG: IPOS – Intellectual Property Office of Singapore

4.1. SG: Section 1

Summarised below are IPOS's responses to the questionnaire distributed in advance on the status of development of patent law, patent examination guidelines, etc., relating to the examination of emerging technology–related inventions and how to proceed with the examination of emerging technology–related inventions in the Republic of Singapore.

1) Status of development of patent law, patent examination guidelines, etc., relating to the examination of emerging technology–related inventions

1.1) Patents Act

The Republic of Singapore has an independent Patents Act; its latest revision was on 10 June 2022. According to the response to Q1 on what patent laws or regulations are grounds for patent eligibility, the novelty, inventive step, and description requirements in the Republic of Singapore, provisions related to the patent eligibility of emerging technology– or AI-related inventions include Section 13 (Patentable Inventions) (1), (1)(a), and (1)(b); Section 14 (Novelty); Section 15 (Inventive Step); and Section 25 (Application Procedures) (4) and (5)(c) of the Patents Act.

Section 13(1) of the Patents Act stipulates that 'Subject to subsection (2), a patentable invention is one that satisfies the following conditions', and this includes the term 'invention'. Thus, the subject matter of a patent application should be 'invention'; namely, patent eligibility is judged by determining whether it falls under 'invention' in the Republic of Singapore as in Japan. However, the Patents Act has neither a definition for 'invention' nor provisions to exclude, as subjects to be protected, subject matters such as discoveries; scientific theories; mathematical methods; aesthetic creations; human mental acts; schemes, rules, or methods for playing a game or doing business; and presentation of information (these are referred to in the Examination Guidelines for Patent Applications at IPOS as described below).

Part III on 'Patentability' of the Patents Act has provisions relating to patentability (novelty, inventive step, and industrial applicability) of emerging technology–related inventions. Section 13(1) stipulates that a patentable invention, not limited to emerging technology–related inventions, is one that satisfies the following conditions: (i) the invention is new; (ii) it involves an inventive step; and (iii) it is capable of industrial application. Section 16(1) specifies that an invention is capable of industrial application if it can be made or used in any kind of industry, including agriculture, from which it is interpreted that service industry or similar ones are also included in 'industry'. Further, Section 14 stipulates that an

invention is taken to be new if it does not form part of the state of the art'. Section 15 'provides that 'an invention is taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms part of the state of the art by virtue only of Section 14(2) and without having regard to section 14(3)'.

The provisions on description requirements of the specification (including the description of an invention) and claims are provided in Part V on 'Applications for Patents' and Section 25 on 'Application Procedures'. Section 25(4) specifies enablement requirement, (5)(b) specifies clarity, and (5)(c) specifies support requirement. Specifically, Section 25(4) provides that 'The specification of an application must disclose the invention in a manner which is clear and complete for the invention to be performed by a person skilled in the art', and the same (5)(c) stipulates that 'the claim or claims must … (c) be supported by the description'.

1.2) Current situation research on examination guidelines, working manuals, handbooks, etc., relating to the examination of emerging technology–related inventions

In response to Q2 on whether your office came to understand the necessity of the patent examination guidelines on emerging technology–related inventions and facilitated the formulation of the guidelines with the ERIA Research 2019–2020 (hereafter, referred to as the 'first phase) as an impetus, IPOS responded 'No'. Regarding Q3 on whether the examination guidelines of your office are already available in the form of a document (either on paper or electronically), IPOS responded 'Yes'.

On Q4 – whether the guidelines include the major elements of patentability (i.e. patent eligibility, novelty, and inventive step) and description requirements – IPOS responded as follows.

> 'Yes. The guideline has all criteria as below: Eligibility, Novelty, and Inventive Step, Description Requirement'.

Furthermore, regarding Q5 on whether the discussions have been carried out in the office or nationwide to deliberate further on how patent examination should be conducted for emerging technology– and AI-related inventions, IPOS responded 'No'.

Regarding Q7 on whether the patent examination guidelines are publicly available in English, IPOS responded 'No. The guidelines are publicly available only in English language'.

In February 2014, the first version of the Examination Guidelines for Patent Applications at IPOS (hereafter abbreviated as 'Examination Guidelines') was prepared. These Examination

Guidelines are revised almost every year. During the second phase of the ERIA Research, the version released on 2 June 2022 was the latest. Note that the Examination Guidelines are publicly available only in English, per response to Q7.

Chapter 8 of the Examination Guidelines is the chapter for 'Patentable Subject Matter and Industrial Applicability', wherein Section A defines 'Statutory requirements'. Per response in Q1, the legal grounds for Section A reside in the provision of Section 13(1) of the Patents Act, including the term 'invention', which states that 'a patentable invention is one that satisfies the following conditions: (a) the invention is new; (b) it involves an inventive step; and (c) it is capable of industrial application' (paragraph 8.1). Note that the Patents Act of the Republic of Singapore has no provision on the definition of an 'invention'.

Section A provides general guidelines as follows: In determining whether the claims define an 'invention', the examiner should consider the substance rather than the form of the claims to identify the actual contribution made by the claimed subject matter, having regard to the problem to be solved, how the claimed subject matter works, and what its advantages are.

An examiner should raise an objection if the actual contribution lies solely on a subject matter that is not an 'invention' (for example, if the actual contribution falls within any of the areas described in sub-sections i, ii, iii, iv, or v (see below) of this section in this chapter) (paragraph 8.5)

Further, Section A includes five sub-sections: (i) Discoveries; (ii) Scientific theories and mathematical methods; (iii) Aesthetic creations: literary, dramatic, musical or artistic works; (iv) Schemes, rules, or methods for performing a mental act, playing a game or doing business; and (v) Presentation of information. Amongst them, sub-section (ii) – Scientific theories and mathematical methods – mentions 'Artificial intelligence and machine learning', particularly in paragraphs 8.22 to 8.27, which state as follows:

> *8.22: Artificial intelligence and machine learning methods typically utilize computational models and algorithms for classification, clustering, regression and dimensionality reduction in the performance of various tasks. Neural networks, support vector machines, discriminant analysis, decision trees, k-means and other such computational models and algorithms applied in machine learning are, by themselves, mathematical methods, and are hence not considered to be inventions.*
>
> *8.23: On the other hand, where the claimed subject matter relates to the application of a machine learning method to solve a specific (as opposed to a generic) problem, the actual contribution of said claimed subject matter is likely considered to go beyond the underlying mathematical method and thus, could be regarded as an invention. To clarify, a generic problem, such as using the method in controlling a system, is unlikely to be sufficient to pass the threshold; the application must be a*

specific one, such as using the method in controlling the navigation of an autonomous vehicle.

8.24: Furthermore, the mere fact that a mathematical method may solve a specific problem is unlikely to be sufficient. The claim should be functionally limited to solve the specific problem, either explicitly or implicitly. This can be achieved by establishing a sufficient link between the specific problem and the steps of the mathematical method, for example, by clearly specifying how the input and the output of the sequence of mathematical steps relate to the specific problem, so that the mathematical method is causally linked to solve said problem.

8.25: For example, a claim directed to a deep learning method, incorporating both heterogeneous transfer and multi-task learning such that the method is characterized by the mathematical steps of the algorithm would be considered a mathematical method per se, and therefore would not be regarded as an invention. However, said method, for example, applied to process audio or video data to solve the specific problem of recognising human speech or recognising images would likely be considered an invention.

8.26: Artificial intelligence or machine learning methods may also be claimed with reference to their implementation on a computer or using computer hardware. In such cases, the same considerations at paragraphs 8.23 and 8.24 should apply to determine whether or not the claimed invention solves a specific problem. Where such a specific problem is not apparent, and the claimed subject matter appears to involve the mere use of conventional computer hardware to implement a machine learning method based on a computation model, it is unlikely that the actual contribution of said claimed subject matter would be considered to go beyond the underlying mathematical method, regardless of whether or not the model can be "trained" based on training data. In such a situation, the underlying mathematical method is also not considered to interact with the conventional hardware to a material extent and in such a manner as to address a specific problem.

8.27: It should be mentioned that artificial intelligence and machine learning methods may be applied across a broad spectrum of industries, and thus care should be taken that the actual contribution of the claims also does not fall within other subject matter not considered to be inventions, such as business methods. For such subject matter, the considerations at paragraphs 8.6 and 8.7 are applicable.

Further, sub-section (v) Presentation of information includes the following guidelines.

8.33: Any invention which is characterised solely by the content of the information is not an invention, even if a physical apparatus is involved in the presentation. In Townsend's Application [2004] EWHC 482 (Pat), claims relating to an advent calendar with an additional indicium on each door were found not to be an invention. Laddie J held that the exclusion does not only apply to the expression of information but also to the provision of information.

8.34: *The key consideration in such cases is whether the actual contribution is the presentation of the information as such. (a) through € are omitted.) (f) Claims to software that are characterised only by source code, and not by any technical features, is unlikely to be considered an invention on the basis that the actual contribution would be a mere presentation of information.*

Regarding Q8 on the development or preparation status of the examination guidelines after the first phase, and Q9 on the progress in facilitating working manuals or handbooks, IPOS responded as follows, respectively.

> 'Currently, there are no further developments in the preparation of patent examination guidelines concerning emerging technologies'.
>
> 'Our response is the same as that in Research 2019–2020, which was 'YES, the IPOS uses working manuals or handbooks for efficiently conducting patent examinations'.

Regarding Q10 on whether the examination guidelines include (or should include in the future) concrete examples that would contribute to a better understanding of AI-related technologies and their patentability, IPOS responded 'no plans at the moment'.

2) How to proceed with the examination of emerging technology–related inventions

Regarding Q11 on whether there is any progress or change after the first phase concerning how your office, in practice, deals with a patent application of AI-related invention, IPOS responded as follows.

> 'Our response is the same as that in Research 2019–2020. IPOS's 2019 response: "General" Examination Guidelines cover broad principles and guidance for examiners to carry out the examination in all technical fields. Meanwhile, examiners are generally informed to understand the "case-by-case" nature of determination for emerging technologies, since eligibility and inventive step for such cases tend to be fact specific'.

Further, regarding Q12 on what is difficult (or required) to newly established practical patent examination guidelines dedicated to assessing patentability and description requirements for emerging AI-related inventions, IPOS responded as follows.

> 'Our office does not currently see the need to develop patent examination guidelines concerning emerging technologies, but we are happy to receive information on this subject should it be shared with ASEAN IP offices'.

Regarding Q13-1 on the number of the AI/IoT applications received so far (or by year), and the number of such applications that the office has (had) started/finished the examination of, IPOS makes no responses on both numbers.

On Q13-2 regarding the total number of staff members and the number of patent examiners (amongst them, the number of examiners who may deal with AI/IoT applications), IPOS responded 'we adjust our examination capacity depending on the forecasted demand for inventions relating to AI/IoT applications'. It did not address the specific number of examiners.

Regarding Q13-3 on whether this ERIA Research helps draw IPOS's attention to future patent examination for emerging technologies and whether you wish to keep conducting this type of deliberations so that each ASEAN office would develop its own sense of assessing patentability for such new technologies, IPOS responded as follows.

> 'It could be a challenge to pick up technical knowledge for patent applications in emerging technologies, since they span across a broad range of technical fields'.

4.2. SG: Section 2

Based on IPOS's responses to the questionnaire distributed in advance, IPOS's opinions on the three case examples prepared by the JPO are summarised as follows.

Case Example 1: Novelty

a) Conclusion: IPOS does not agree with JPO's conclusion that Claim 1 lacks novelty and Claim 2 has novelty.

b) Explanation: IPOS's responses to Q14-1, Q15-1, Q15-3, and Q16 are summarised as follows.

Regarding Q14-1 on whether to agree with claiming combination inventions referred to as combination or sub-combination claims in light of Singapore's patent-related laws and regulations, IPOS responded as follows.

> 'Agree. We would examine Claims 1 and 2 of Case example 1 based on broad principles and guidance of the Examination Guidelines for Patent Applications at IPOS (Version: Oct 2021) (hereinafter referred to as "the Examination Guidelines"). Paragraph 5.81 of the Examination Guidelines provides that a claim to an entity (an apparatus or a product) may seek to define the invention by reference to features comprised in another entity that is not part of the claimed

entity but that is related to it through use'.

Paragraph 5.81 of the Examination Guidelines mentioned in the response to Q14-1 states:

> *5. THE APPLICATION*
>
> *I. Clarity and conciseness of claims (Section 25(5)(b))*
>
> *x. Definition by reference to (or use with) another entity*
>
> *5.81 A claim to an entity (an apparatus or a product) may seek to define the invention by reference to features comprised in another entity that is not part of the claimed entity but that is related to it through use. An example of such a claim is "a cylinder head for an engine," where the former is defined by features of the location where it is connected in the latter. In assessing the claim for the requirements of clarity, it should be established whether the claim is directed to the first entity or to a combination of the first and second entities. The wording of the claim must be adapted appropriately to reflect this, otherwise the claim would be objected to for lack of clarity.*

In addition, regarding Q15-1 on whether to agree with JPO's reasoning for the conclusion that Claim 1 of Case Example 1 lacks novelty, IPOS responded as follows.

> 'Disagree. In our opinion, the feature of "the response information is the information on a type of the said object specified by the said server on the basis of information received via a network from a production facility of the said object" of Claim 1 is not disclosed in the prior art, as the prior art discloses "the response information is the information on a type of the said object specified by the said server" without specifying that it is based on information received via a network from a production facility of the said object. Therefore, the response information of Claim 1 appears to differ from the prior art's response information. For example, information received from a production facility is the latest information on the product. In contrast, the recency of the type of information in the prior art is unknown. Consequently, the robot apparatus may operate differently from the prior art, as the operation of the robot apparatus is controlled based on the received response information. Therefore, Claim 1 is novel'.

Regarding Q15-3 requesting to explain why this claimed invention meets novelty requirement if the respondent disagrees in Q15-1, IPOS responded, 'Please refer to the response to Question No. 16'. Then, in response to Q16 on the results or possible office actions after assessing the novelty if IPOS examines Case Example 1, IPOS stated:

> 'If we examine case example 1, Claims 1 and 2 are novel when we consider the cited prior art. Paragraph 3.20 of the Examination Guidelines provides relevant guidance. Claim 1 is novel. The feature of "the response information is the information on a type of the said object specified by the said server on the basis of

information received via a network from a production facility of the said object" of Claim 1 is not disclosed in the prior art, as the prior art discloses "the response information is the information on a type of the said object specified by the said server" without specifying that it is on the basis of information received via a network from a production facility of the said object. Therefore, "the response information" of Claim 1 may be different from "the response information" of the prior art. Consequently, the robot apparatus may operate differently from the prior art, as the operation of the robot apparatus is controlled on the basis of the received response information. Therefore, Claim 1 is novel. Claim 2 is novel. The prior art discloses that "the response information is the information on a type of the said object specified by the said server'. The information on a type of the said object may be considered as attribute information. Thus, the feature "wherein the response information contains the attribute information "and the unique identification information of each of the said object specified by the said server" of Claim 2 is disclosed by the prior art, except the feature described in italics: "the unique identification information". This particular part is not disclosed by the prior art. Therefore, Claim 2 is novel. Other requirements, including inventive step, industrial applicability, clarity, support, are also considered. Depending on the assessment of the other requirements, either a written opinion (Section 29[7]) or an exam report (Section 29[5][b]) is issued to the applicant'.

Sections 29(7) and 29(5b) of the Singapore Patents Act (Chapter 211, enforced on 10 June 2022), which are mentioned in the response to Q16, are as follows. Paragraph 3.20 of the Examination Guidelines, mentioned in the response to Q16, state:

Section 29: *Search and Examination* *(5) Where the applicant has complied with subsection (1)(b), the Registrar must* *(a) cause the application to be subjected to* *(i) a search by an Examiner; and* *(ii) an examination by an Examiner; and* *(b) upon receiving the search and examination report prepared by the Examiner, send the applicant a copy of that report.* *(7) If it appears to an Examiner during the examination of an application under subsection (4) or (5) that one or more of the matters prescribed for the purposes of this subsection apply, the Examiner must give the applicant at least one written opinion to that effect, and the Registrar must, upon receiving the written opinion, send the applicant a copy of the written opinion.*
3. NOVELTY

C. Prior disclosure

3.20 The provision of novelty therefore involves a consideration of whether the prior art discloses all of the features of the claim in question. In general a prior disclosure will destroy the novelty of a later claim only if it discloses each and every feature specified in that claim. If the claim contains technically equivalent or additional features, then an objection of obviousness would be more appropriate.

Case Example 2: Description Requirements

a) Conclusion: IPOS agrees with JPO's conclusion that the description does not provide a clear and sufficient disclosure to enable a person skilled in the art to carry out the invention as in Claim 1.

b) Explanation: IPOS's responses to Q17-1, Q17-3, Q18-1, Q18-2, Q19, Q19-1, Q19-2, Q19-3, Q19-4, Q20, and Q21 are summarised below.

The JPO gives, for example, the conclusion that 'the description only discloses that a trained model "predicted" expected results of the invention to be enabled and established; however, the disclosure does not verify the accuracy of an estimation value by the trained model; and therefore, the description does not disclose any embodiments supporting the facts of the claimed invention'.

Regarding Q18-1 requesting IPOS's opinions on JPO's conclusion, IPOS responded 'Agree'. Further, regarding Q18-2 on whether IPOS would apply the same/similar argument of the JPO and refuse the application due to an insufficient disclosure (that is, an estimation value by the trained model cannot be a substitute for the results of examples or embodiments to support the claimed invention), IPOS responded as follows.

> 'The specification of Case Example 2 may not meet the sufficiency requirement for the following reasons.
>
> (1) Claim 1 defines an anaerobic adhesive composition which shows the curing strength equal to or exceeding 30% of the curing strength after 24 hours have passed, within 5 minutes from the start of curing. The specification discloses that a trained model is used to obtain an estimation result which shows the possibility of obtaining such anaerobic adhesive composition by adding a 0.08–3.2 mass % compound A and a 0.001 to 1 mass % compound B in combination. However, it is possible that the estimation result obtained by the training model is wrong and the person skilled in the art would not obtain such anaerobic adhesive composition by adding a 0.08–3.2 mass % compound A and a 0.001–1 mass % compound B in combination.

(2) Case Example 2 assumes that "it is a common general technical knowledge at the time of filing that it is difficult to control an anaerobic adhesive composition so as to rapidly raise the curing temperature within 5 minutes or so after the start of curing, and that various conditions for production such as a type, combination, or combination ratio of polymer material, free radical initiator, or free radical reducing agent closely interact with each other". Thus, it seems that it is likely to impose an undue burden on the person skilled in the art to test which of the possible ways obtained by the trained model will result in such anaerobic adhesive composition in reality. Therefore, the specification of Case Example 2 may not disclose the invention in a manner which is clear and complete for the invention to be performed by the person skilled in the art'.

From these responses, IPOS obviously agrees with JPO's conclusion in Case Example 2, but its reasoning slightly differs from that of the JPO.

Case Example 2 is used to contemplate the issue of how the invention is sufficiently disclosed by the evidence of embodiment, such as working examples or results of an experiment, in a case where the invention (typically pharmaceutical products) is of a kind that needs to be supported by data to meet 'enablement requirement'. Q17-1 is on whether IPOS agrees with such 'enablement requirement' in light of patent laws and regulations in Singapore. IPOS responded as follows.

'Agree. Section 25(4) of the SPA requires that the specification shall disclose the invention in a manner which is clear and complete for the invention to be performed by the person skilled in the art. For medical use claims, enablement may require that the use is supported by credible evidence, which could include (but is not limited to) the provision of data (the Examination Guidelines, paragraphs 8.132-8.137)'.

Further, Q17-3 is on whether there is an 'exemption' wherein the enablement requirement is satisfied even if no actual experimental data is shown in the description and whether there is an 'exemption' if the claimed invention is a common general technical knowledge or if AI-related technologies furnish the claimed invention with estimated data or any other information required. In response to this question, IPOS stated:

'Where credible evidence is required for enablement, such as in the case of medical use claims, the applicant cannot be exempted from providing the description with results or data of the physical experiment. If the claimed invention is common general technical knowledge, the person skilled in the art would not be required to carry out tests or developments that go beyond routine

trials. Thus, this may meet the requirements of sufficient disclosure. In case where AI-related technologies furnish the claimed invention with estimated data or any other information required, it would depend on the details of the estimated data or any other information required. We determine whether a specification meets the sufficiency requirement by applying the principles on sufficiency (see the Examination Guidelines, Chapter 5, Part F. Sufficiency of disclosure) to specific facts of each specification. The legal basis is Section 25(4) of the SPA'.

Section 25(4) of the Singapore Patents Act, mentioned in Q17-1 and Q17-3, state as follows. Further, paragraphs 8.132 to 8.137 of the Examination Guidelines, mentioned in Q17-1, are as follows.

Section 25: *Making of Application*

(4) The specification of an application must disclose the invention in a manner which is clear and complete for the invention to be performed by a person skilled in the art.

8.132 First medical use claims must be supported by evidence of the likely efficacy of the substance or composition in therapy. However, the Applicant is entitled to a broad form of claim (such as in examples (i) and (ii)) in the case of a substance or composition, wherein its use in medicine is previously unknown. Therefore, it is unlikely a first medical use claim will lack support as long as the Applicant provides credible evidence of the efficacy of the claimed substance or composition for use in the treatment of any one, if not more diseases. For a first medical use claim drafted in form of example (iii): "Compound X for use in the treatment of disease Y," support has to be provided for the specified use.

8.133 This requirement of support for known substances or compounds is based on the decision of the Patents Court in Prendergast's Applications [2000] RPC 446. Although this case law is pertaining to support for 'Swiss-type' claims, it remains nonetheless relevant to first medical use claims. It was held in Prendergast's Applications that since the distinguishing feature of the 'Swiss-type' claim from the prior art is its intended use, this use must in turn, be supported by credible evidence.

8.134 This requirement of support is also mandatory for new and inventive substances or compositions. This view was held by the Hearing Officer in F. Hoffman - La Roche's Application BL O/192/04:

'Support is needed for claims to the use of compounds for therapy, regardless of whether the compounds are themselves new or inventive'.

8.135 The form of evidence is not critical. In vivo, in vitro and in silico modelling data may prove sufficient if it is considered a credible form of support of its efficacy in a medical use. However, the level of evidence provided will be decided upon a case-by-case basis as it may also be dependent upon the state of the art in relation to a particular application. In F. Hoffman-La Roche's Application BL O/192/04, homology comparisons of the claimed polypeptide were used to determine biological activity by reference to a polypeptide of known activity. It was concluded that although the description provided

support for the function of the Npt2B polypeptide in its native state, this support cannot be read across to the claimed polypeptide in an isolated, non-naturally occurring environment. The Hearing Officer was of the view that it is unlikely the Npt2B polypeptide will retain its native state structure when isolated in 99% pure form and hence it was also unlikely that the polypeptide retained its function as a sodium phosphate transporter. Moreover, in the absence of any evidence demonstrating the efficacy of the isolated polypeptide in a non-naturally occurring environment, the claims relating to the therapeutic uses of the isolated form of Npt2B polypeptide were considered to lack support.

8.136 The evidence in support of first medical use claims must be provided in the application as filed. The absence of this would result in the first medical use as being no more than mere speculation. In such instances, the Examiner is required to inform the Applicant of the lack of support for the claimed first medical use. This objection cannot be overcome by later-filed data.

8.137 Moreover, if the application claims priority from an earlier application and the earlier application does not enable the therapeutic use of the claimed substance or composition, then claims relating to the medical use of the substance or composition would not be entitled to the priority date based upon the earlier application (see also paragraph 3.91). The same applies for both first and second or subsequent medical uses.

Furthermore, regarding Q19 on the results or possible office actions if IPOS examines Case Example 2 and assesses whether the claimed invention is disclosed sufficiently, IPOS responded as follows.

'The specification of Case example 2 may not meet the sufficiency requirement for the following reasons. The legal basis is section 25(4) of the SPA.

(1) Claim 1 defines an anaerobic adhesive composition which shows the curing strength equal to or exceeding 30 % of the curing strength after 24 hours have passed, within 5 minutes from the start of curing. The specification discloses that a trained model is used to obtain an estimation result which shows the possibility of obtaining such anaerobic adhesive composition by adding a 0.08–3.2 mass % compound A and a 0.001–1 mass % compound B in combination. However, it is possible that the estimation result obtained by the training model is wrong and the person skilled in the art would not obtain such anaerobic adhesive composition by adding a 0.08–3.2 mass % compound A and a 0.001–1 mass % compound B in combination.

(2) Case example 2 assumes that "it is a common general technical knowledge at the time of filing that it is difficult to control an anaerobic adhesive composition so as to rapidly raise the curing temperature within 5 minutes or so after the start of curing, and that various conditions for production such as a type, combination,

> or combination ratio of polymer material, free radical initiator, or free radical reducing agent closely interact with each other". Thus, it seems that it is likely to impose an undue burden on the person skilled in the art to test which of the possible ways obtained by the trained model will result in such anaerobic adhesive composition in reality.

Therefore, the specification of Case example 2 may not disclose the invention in a manner which is clear and complete for the invention to be performed by the person skilled in the art'.

Moreover, regarding Q19-1 on what technical fields IPOS requires applicants to submit embodiments or results of an experiment for sufficient disclosure of the invention, IPOS responded as follows.

> 'We determine whether a specification meets the sufficiency requirement by applying the broad principle to specific facts of each specification. The legal basis is Section 25(4) of the SPA. There are no specific kinds of inventions identified for the situation mentioned in the question'.

Regarding Q19-2 on whether IPOS takes any measures to inform the applicant of such 'sufficient' presentation of data for enablement verification, IPOS responded as follows.

> 'The Examination Guidelines, which is publicly available, provides guidance regarding sufficiency of disclosure (Chapter 5, Part F. Sufficiency of disclosure) to the applicants. Further information on experimental results/data in the context of medical use claims can be found in paragraphs 8.132–8.137 and 8.178–8.184 of the Examination Guidelines. Multiple relevant court decisions which contain concrete examples as well as guidance for the determination of whether a disclosure is sufficient are also provided in the Examination Guidelines'.

Further, regarding Q19-3 on whether IPOS receives any requests or even complaints by the applicant or parties concerned requesting that IPOS accept the AI-generated estimation data to satisfy the enablement issue, IPOS responded 'No such feedback'.

In contrast to Q19-1 above, Q19-4 asks for an explanation of how IPOS requires the applicant to fulfill the enablement requirement for the claimed invention if IPOS does not require the applicant to present any working examples or results of the experiment to satisfy the enablement requirement. Regarding this question, IPOS responded, 'As explained in our replies for Q19-1 and Q19-2, experimental results/data may be relevant for sufficiency of disclosure for certain types of inventions in line with the Examination Guidelines'.

Regarding Q20 on what the laws, regulations, or patent examination guidelines would stipulate such exception of the 'enablement requirement,' IPOS responded, 'N/A: The SPA does not provide for any 'exemption of the enablement requirement'.

Q21 is on whether IPOS would envisage any possibility for your office to accept AI-generated data, such as the data produced by the estimation value of the trained model instead of working examples or experimental results as those satisfying the enablement requirement, and if so, whether IPOS already has or will formulate any explicit rules or guidelines. IPOS's response is as follows.

> 'We determine whether a specification meet the sufficiency requirement by applying the broad principle to specific facts of each specification. Whether AI-generated data instead of working examples/experimental results can meet the sufficiency requirement would depend on the specific facts of each case, such as what is claimed, what the common general knowledge is, etc. The legal basis is section 25(4) of the SPA'.

Given these responses, IPOS seems to assume that depending on specific facts of individual cases, AI-generated data, such as an estimation value of the trained model, may be accepted as those fulfilling the enablement requirement instead of working examples or experimental results.

Case Example 3: Eligibility

a) Conclusion: IPOS agrees with JPO's conclusion that the inventions of Claims 1 and 2 do not satisfy patent eligibility, while the invention of Claim 3 satisfies patent eligibility.

b) Explanation: The responses of IPOS to Q22-1, Q22-2, Q22-3, Q23-1, Q23-2, and Q24 are summarised below. Regarding Q22-1 on which provisions in your patent laws, regulations, or examination guidelines in Singapore expressly provide for 'unpatentable inventions,' IPOS response is as follows.

> 'Section 13(1) of the SPA contains the word "invention". Therefore, the subject matter of a patent application must be for an invention. The Examination Guidelines (Chapter 8, Part A. Statutory requirements) provides some guidance as to what are not considered to be inventions, such as mathematical method, presentation of information per se etc.'.

Section 13 of the SPA mentioned in the response to Q21-1 is as follows. In addition, the titles of Chapter 8, Part A of the Examination Guidelines mentioned in the response to Q22-1 are described below.

Section 13: Patentable inventions *(1) Subject to subsection (2), a patentable invention is one that satisfies the following conditions:* *(a) the invention is new;* *(b) it involves an inventive step; and* *(c) it is capable of industrial application.* *(2) An invention the publication or exploitation of which would be generally expected to encourage offensive, immoral or anti-social behaviour is not a patentable invention.* *(3) For the purposes of subsection (2), behaviour is not to be regarded as offensive, immoral or anti-social only because it is prohibited by any law in force in Singapore.)*
8. PATENTABLE SUBJECT MATTER AND INDUSTRIAL APPLICABILITY *A. Statutory requirements* *i. Discoveries* *ii. Scientific theories and mathematical methods* *iii. Aesthetic creations: literary, dramatic, musical or artistic works* *iv. Schemes, rules or methods for performing a mental act, playing a game or doing business* *v. Presentation of information*

Regarding Q22-2 on whether your office has a list of unpatentable inventions (list of exclusions), and 'mere presentation of information' is included in the list, IPOS responded, 'Yes. Presentation of information as such is not considered to be an invention'. However, the list of exclusions does not exist in the Singapore Patents Act; it exists in the Examination Guidelines.

Further, regarding Q22-3 on what kinds of examples your office supposes or anticipates for such unpatentable 'presentation of information based on the experiences of your patent examination practices', IPOS responded as follows.

> 'For example, any claimed subject matter which is characterized solely by the content of the information is not an invention. Another example is that a claim defining the choice of how and where to present information would not be an invention if the actual contribution lies solely in the presentation of information (paragraph 8.34 of the Examination Guidelines'.

Paragraph 8.34 of the Examination Guidelines mentioned in the response to Q22-3 states as follows.

8. PATENTABLE SUBJECT MATTER AND INDUSTRIAL APPLICABILITY

A. Statutory requirements

v. Presentation of information

8.34 The key consideration in such cases is whether the actual contribution is the presentation of the information as such.

(a) For example, a gaming machine having product names rather than conventional symbols would represent mere presentation of information (Ebrahim Shahin's Application BL O/149/95).

(b) A claim defining the choice of how and where to present information would not be an invention since this still relates to the presentation of information (Autonomy Corp Ltd v. Comptroller General of Patents, Trade Marks & Designs [2008] EWHC 146 (Pat)).

(c) A newspaper layout designed such that folding the paper did not hinder reading was found to be an invention (Cooper's Application [1902] 19 RPC 53), as was a ticket on which information was presented in such a way that it was not lost when the ticket was torn (Fishburn's Application [1940] 57 RPC 245).

(d) An instructional speech course in which text was highlighted in a particular way to indicate stress and rhythm was not considered an invention (Dixon's Application [1978] RPC 687).

(e) A claim to a known product such as a pharmaceutical which is characterised by the instructions on the package will not generally be allowed, since the contribution lies solely in the presentation of information (see paragraph 8.188).

(f) Claims to software that are characterised only by source code, and not by any technical features, is unlikely to be considered an invention on the basis that the actual contribution would be a mere presentation of information.

In addition, the JPO concludes that both Claims 1 and 2 do not specify any means or a method of presenting the sugar content data of apples; both data do not have technical features in the presentation of information (presentation per se). Thus, the feature resides solely in the content of the information, and its main objective is to present information. Q23-1 asks for IPOS's view on JPO's conclusion. IPOS responded 'Agree'. Regarding Q23-2 whether IPOS would apply the same/similar argument of JPO and refuse the application because the claimed subject matter falls under the category of unpatentable 'mere presentation of information' and if IPOS agrees with JPO's conclusion, IPOS responded as follows.

> 'Claim 1 of Case Example 3 defines sugar content data of preharvest apples measured by a specific way. The claimed subject matter is characterized solely by the content of the information. Therefore, it is not an invention. In a similar way, the subject matter of Claim 2 is not an invention'.

Further, regarding Q24 on the results or possible office actions if IPOS examines Case Example 3 and assesses the 'eligibility' of the claimed subject matter (also applicable provisions), IPOS responded as follows.

> 'If we examine 'Case example 3', the subject matter of Claims 1 and 2 is considered not an invention, while the subject matter of Claim 3 is an invention. The legal basis is section 13(1) of the SPA'.

Given these responses, both the JPO and IPOS conclude that since the subject matter of Claims 1 and 2 of Case Example 3 is characterised solely by the content of the information, it is not an invention under the patent laws thereof (no eligibility for patent) while the JPO regards it as 'mere presentation of information' and IPOS regards it as 'presentation per se of information'. On the other hand, the subject matter of Claim 3 has patent eligibility. It is considered that the JPO has almost the same opinion on Case Example 3 as IPOS.

(End of section for Singapore)

5. TH: DIP – Thailand Department of Intellectual Property

5.1. TH: Section 1

1) Status of development of patent law, examination guidelines, etc., relating to the examination of emerging technology–related inventions

1.1) Patent Law

As the relevant provisions in examining emerging technology–related inventions, the Patent Act provides '(3) computer programs', which is one of the five types listed in Section 9 specifying that 'The following inventions are not protected under this Act'. Except for this point, there is no special provision about emerging technology–related inventions in the Patent Act, and emerging technology–related inventions are examined based on Section 3 (the definition of invention); Section 5 (novelty, inventive step, and industrial applicability); and Section 17 (description requirements). All of these apply to all the inventions.

(Reference)

Section 9

The following inventions are not protected under this Act:

(1) naturally occurring microorganisms and their components, animals, plants or extracts from animals or plants;

(2) scientific or mathematical rules or theories;

(3) computer programs;

(4) methods of diagnosis, treatment or cure of human and animal diseases; and

(5) inventions contrary to public order, morality, health, or welfare

1.2) Examination guidelines, handbooks, etc., relating to the examination of emerging technology–related inventions

'The Manual of Petty Patent and Patent Application Examination' (2019 revised version) (only in the Thai language) explains the examination of computer programs in detail, specifically Part 1 (Computer Programs) of Chapter 1 and Chapter 6 (Guidelines for Computer-related Inventions). According to these guidelines, computer programs and media with such programs recorded therein are not protected. However, if an invention can be determined to provide technological development to prior art, even though the invention may use a computer program, the invention may be patentable. For example, a machine controlled by a program or a production managed by both a program and a control step is generally deemed to be granted protection in the case of an invention relating only to a program that controls the work in the generally used computer. And if the program provides technical

efficiency, the invention is patentable. Such an explanation is provided in the manual. The eligibility for patent of emerging technology–related inventions is set to be considered following this manual at DIP. Such practice involves judgement of the eligibility for patent of Case Example 3.

Other than the 'Manual of Petty Patent and Patent Application Examination' (2019 revised version), no other patent examination materials for examiners are issued although the manual has no separate explanations dedicated to AI, CS, BM, IoT, etc. (Q8).

2) How to proceed with the examination of emerging technology–related inventions

As discussed above, DIP has prepared the 'Manual of Petty Patent and Patent Application Examination'. In the response to Q9 relating to the manual on the examination, DIP conducts the examination on emerging technologies based on the current examination guidelines. According to the responses to Q9 and Q10, the manual has not been updated from the previous research (first phase).

In Q13-3 (challenges on the examination), DIP shared challenges on examining future emerging technology–related inventions as follows.

> 'The DIP examiners in charge of AI/IoT inventions lack basic AI expertise and knowledge. The DIP's manual 2019 (examination guidelines 2019) does not yet have enough details for examining AI/IoT-related patent applications. The DIP also has no concrete ideas and know-how to deal with such AI/IoT inventions thus the office takes a longer time to complete such examinations'.

Further, DIP responded, 'As for this ERIA Research, it is helpful for the DIP to comprehend whole pictures of the emerging technologies. Therefore, this office would like the ERIA to conduct this project for us to keep up with this type of deliberations'.

5.2. TH: Section 2

Concerning the three case examples and assessments prepared by the JPO, DIP's opinions on each case example are summarised based on the responses to the emerging questionnaire and the interview for the opinion exchange meeting (26 July 2023).

Case Example 1: Novelty

a) Conclusion:

DIP concludes that the invention of Claim 1 does not have the novelty (from the responses to Q15-1, etc.)

b) Explanation:

The response to Q14-1 is that 'The DIP does not use the terminologies such as 'combination claim' or 'sub-combination claim' as JPO's Patent Examination Guidelines do. However, the DIP understands how to claim in such a manner, for the office receives the applications with claims in such ways'. The response to Q15-1 is that 'The DIP would go along with the JPO's reasoning, for the robot itself stays the same with no affected changes'. The response to Q15-2 is that 'In our opinion, the program itself of the robot apparatus has not been changed by the references (specific information) of each device which changed the 'operation' of the robot control section. Claim 1 focuses on claiming the robot apparatus operation, so the input information (the response information) from different sources does not affect the robot apparatus operation'.

The response to Q16 is that 'The DIP will take an office action to clarify that the applicant's claimed invention is not novel, following Sections 5(1) and 6 of the Thai Patent Act'. In addition, at the opinion exchange meeting, DIP stated that the invention of Claim 2 has novelty compared to the prior art.

Case Example 2: Description Requirements

a) Conclusion:

Agree with JPO's conclusion.

b) Explanation:

The response to Q17-1 is, 'Agree. Pursuant to Section 27 of the Thai Patent Act, the DIP would request the applicant to submit any results of experiments'. The response to Q17-3 is, 'In case where the claimed invention is a common general technical knowledge, currently, it is not possible for the applicant of such type of inventions to receive exemption from providing the description with any results or data of the physical experiment. The applicants should submit a confirmation of experimental results that supports the estimation by the trained model'. Further, in response to the question of how DIP will determine in the case that the second condition that AI-related technologies furnish the claimed invention with estimated data or any other information required is satisfied, DIP's response is that 'It is still not possible and the answer is same as the above-mentioned answer'.

The response to Q18-1 is, 'Agree. Inventors have to submit experimental results to enable a person skilled in the art to carry out the invention. Thus, the DIP requests some experiment results'. The response to Q18-2 is, 'The description should provide a clear and sufficient disclosure as to enable person skilled in the art to carry out the invention as in the claimed invention by providing a certificate of experimental results that supports the claimed invention'.

The response to Q19-1 is that 'The DIP would request the applicant to present the embodiments or concrete results of an experiment for all kind of invention for the purpose of sufficient disclosure of the claimed invention. (Section 27 of the Thai Patent Act)'

The response to Q19-2 is, 'The DIP considers that it is difficult to show concrete examples of 'sufficient disclosure.' Because this office examines the applicant's presentation of embodiments or experimental results by corresponding such data with the description of invention in a case-by-case manner'.

Further, in response to Q19-3, DIP responded that 'The DIP has never received such kind of requests or even complaints by the applicants or any other parties'. Regarding Q19-4, DIP responded as follows.

> 'As replied to Question 19-1, the DIP does require working examples or results of the experiment. In a case where the DIP will take an office action to further clarify if the applicant's claimed invention is not clear and concise, following to Section 17 of the Thai Patent Act'.

The response to Q20 is that 'Following the DIP's Manual 2019, Chapter 1, Part 1, Item 5 (page 15) says that 'the description must disclose the invention in a complete, concise, and clear manner, which will allow a person skilled in the art related to an invention can be made and acted on according to that invention'.

The response to Q21 is that 'As of now, the DIP does not produce any explicit rules or guidelines to cope with this issue. It will be considered in the future when the DIP receives more cases of this kind'.

Case Example 3: Eligibility

a) Conclusion:

DIP agrees with JPO's way of thinking. (Q23-1)

b) Explanation:

In response to Q22-1, DIP responded as follows.

> 'Section 9(2) of the Thai Patent Act stipulates principles in relation to scientific or mathematical rules or theories. Based on this, the Manual 2019 indicates the 'list of exclusions (negative list)' of unpatentable inventions includes:
>
> (i) The laws of nature as such,
>
> (ii) Mere discoveries and not creations,
>
> (iii) Those contrary to the laws of nature,
>
> (iv) Those in which the laws of nature are not utilized

Bearing the above items in mind, the DIP concludes that the 'presentation of the data' is 'unpatentable inventions' which falls under item (ii) above'.

In the opinion exchange meeting, in response to the question from ERIA, DIP stated that the above (i) to (iv) are not defined in the Patent Act but defined in the manual.

(Reference)

Section 9

The following inventions are not protected under this Act:

(1) naturally occurring microorganisms and their components, animals, plants or extracts from animals or plants;

(2) scientific or mathematical rules or theories;

(3) computer programs;

(4) methods of diagnosis, treatment or cure of human and animal diseases;

(5) inventions contrary to public order, morality, health or welfare.

Q22-2 asks if your office has a list of inventions that lack eligibility and whether the list includes mere presentation of information. The response thereto is that 'No, even though the DIP has the "list of exclusions", the list does not include "presentation of data" as it is used by the JPO'.

The response to Q23-1 is that 'the DIP agrees'. The response to Q23-2 is that 'The "presentation of the data" in Claims 1 and 2 is "unpatentable inventions", following Section 9(2) of the Thai Patent Act'.

The response to Q24 is that 'The DIP would issue an office action to the applicant suggesting that the amendment may be made by deleting Claims 1 and 2 in accordance with Section 9(2) of the Thai Patent Act'. In the opinion exchange meeting on 26 July 2023, ERIA asked DIP about the eligibility of Claim 3. DIP responded that "Claim 3 has the eligibility'.

Further, in the opinion exchange meeting, DIP asked whether the data generated by the method of Claim 3 has eligibility. ERIA stated that it is still data itself, so it is not a highly advanced creation of technical idea utilising the laws of nature (definition of invention) according to the examination guidelines of JPO. Therefore, it does not have the eligibility of invention. Further, DIP stated that Claim 3 has the eligibility but asked whether it has the inventive step. ERIA responded that after determining the eligibility, it is necessary to compare with the prior art to determine the inventive step.

(End of section for Thailand)

6. VN: IP Viet Nam – Intellectual Property Office of Viet Nam

6.1. VN: Section 1

1) Research on patent law, implementation rules, etc., relating to the examination of emerging technology–related inventions

1.1) Law on Intellectual Property

The Law on Intellectual Property includes copyrights, industrial property rights, industrial designs, trademarks, geographical indications, trade secrets, and others.

Articles 58 and 59 of the law correspond to the provisions relevant to examining emerging technology–related inventions. Article 59 illustrates examples of inventions ineligible for patent (see Case Example 3 described later) that include 'data itself' of Case Example 3. This is clarified by the new examination guidelines below. Examiners make determinations on Article 58 (novelty, inventive step, and industrial applicability) and Article 102 (description requirements) of the law, which are applied to all the inventions, including emerging technology–related inventions.

1.2) Current situation research on examination guidelines, handbooks, etc., relating to the examination of emerging technology–related inventions

The 'Examination Guidelines for Patents' was issued in 2010 (only in the Vietnamese language) (Q7). The Guidelines consist of six chapters and explain formality examination, substantive examination, handling of international applications, and administrative provisions in the Intellectual Property Office of Vietnam (IP Viet Nam). Then, in Chapter 2, 'Formality Examination', computer programs are included in the 10 types ineligible for a patent. However, if an invention has a technical characteristic and aims at solving a technical problem by technical means as a substantial technical solution to provide a technical effect, the invention can be protected (the Guidelines, Chapter 2, 5.8.2.5 'Computer'). Further, Annex I explains further details of assessment criteria for computer program–related inventions.

1.3) Annex I to the guidelines on the examination of a patent application

Annex I is newly added to the guidelines and is named 'Guidelines for Determining the Eligibility for Patent Protection of Claimed Subject Matter of Computer Program–Related Inventions'. The new Annex I was made publicly available on 10 March 2023. In the guidelines, inventions utilising computer programs are classified into 10 categories. Basic views for respective categories are provided to determine patentability.

The annex has very fulfilling contents, as the guidelines: '4.7 Data retrieval, formats, and structures' relates to Case Example 3 of this research report. The annex includes many case examples; it adopts two case examples used in phase 1 of this research ('Trained Model for Analysing Reputations of Accommodations' and 'Estimation of Hydroelectric Generating Capacity'). The annex was prepared by JICA experts from Japan. It included a process for hearing opinions from patent experts, university professors, and others at the public hearing to obtain the opinions from the outside.

Annex I can be referred to from the 2D code at right.

(Reference)

The table of contents of 'Guidelines on examination of a patent application in Vietnam (Annex I)

Also, note that Annex II was publicly available on the website only in the Vietnamese language in April 2023.

2) How to proceed with the examination of emerging technology–related inventions

The examination on emerging technology–related inventions is handled by examiners in the Electronic and Telecommunication Division. These examiners have backgrounds on telecommunications and computer and information technologies. (Q11) Further, IP Viet Nam

considers it is necessary to include case examples in the examination guidelines and to support the examiners in the field of emerging technologies with the examination guidelines when they examine emerging technology–related inventions. In this regard, IP Viet Nam has further improved by adding Annex I to the examination guidelines for patents.

IP Viet Nam recognises that publishing Annex I is just the start of the improvement. It has to work to aim at a higher level. In the questionnaire, IP Viet Nam has the following difficulties when examining AI-related inventions (Q13-3):

> 'The IP Viet Nam lacks AI-related knowledge, unfamiliar technical field that AI application is embedded; and lacks specified comprehensive guidelines to assess patent applications on computer software (CS), artificial intelligence (AI), business model, IoT, and others. (The following are the major difficulties when examining the AI applications: (i) Lack of AI knowledge base, unfamiliar technical field that AI application is embedded. (ii) Lack of specified comprehensive guidelines for to assess applications such as CS, AI, BM or internet of things (IoT) patent application)'.

6.2. VN: Section 2

Concerning the three case examples prepared by the JPO and their assessments, IP Viet Nam's opinions on each case example are summarised, based on the responses of IP View Nam to the questionnaire distributed in advance, and deliberations at IP Viet Nam.

Case Example 1: Novelty

a) Conclusion: IP Viet Nam agrees with JPO's conclusion that the invention of Claim 1 lacks novelty.

b) Explanation: Explanations on deliberations at IP Viet Nam and the response to Q15-2 are summarised below.

Case Example 1 is a combination invention, which comprises a first entity (a robot) and a second entity (a server). Regarding Claim 1, IP Viet Nam agrees with JPO's views in both Q14-1 and Q15. IP Viet Nam understands and agrees with JPO's conclusion and reasoning that the invention of Claim 1 lacks novelty compared to the prior art. In Q15-2, IP Viet Nam states that Claim 1 lacks novelty since the feature 'a type of the said object specified by the said server on the basis of information received via a network from a production facility of the said object' in Claim 1 does not differentiate the subject matter of Claim 1 from the prior art. Therefore, Claim 1 is not considered novel, which is the same as JPO's thinking. Regarding Q16, IP Viet Nam responds that it is determined that Claim 2 has novelty under

Article 60 of the Law on Intellectual Property (No. 50/2005/QH11). In this regard, IP Viet Nam has the same opinion as JPO.

At the deliberations, IP Viet Nam expressed that our daily lives are abundant with examples of smartphones to communicate with a server or robots that communicate with a server. Therefore, IP Viet Nam would receive more applications, including sub-combinations in the future. The necessity of preparing the examination guidelines on combination inventions like Case Example 1 was shared. Further, IP Viet Nam asked about how to conduct a prior art search on the above-described combination invention. ERIA has responded that if the subject matter of an invention is a robot (entity 1), the JPO would make search on prior art on robots.

Case Example 2: Description Requirements

a) Conclusion: IP Viet Nam agrees with JPO's conclusion that the description requirement is not satisfied.

b) Explanation:

In response to Q17-1, IP Viet Nam stated the reason that the description requirement is not satisfied: 'Related to the example 2, in the Claim 1, we consider the prediction results of the trained model will merely give the manufacturer experiential orientations. To meet the enablement requirement standard, the description has to be supported by comprehensive data of experimental results, especially relating to pharmaceutical products. Therefore, the description of "case example 2" does not meet the standard of 'enablement requirement'. Q17-3 is a question on whether there is 'an exception' that satisfies the description requirement even without describing any data of the actual experiment in the description. In response to this question, IP Viet Nam stated, 'We do not envisage exceptions to the "enablement requirement" in all situations. Even if there are circumstances exemplified in the questions above (Q17-3), the office is expected to require the applicant to submit relevant evidence'. Thus, no case exempts an applicant from submission of data from the actual experiment (no exception).

Regarding Q18, IP Viet Nam agrees with JPO's comment that what is what is presented in the description is 'prediction' that a trained model would demonstrate an expected effect. However, the accuracy of such prediction of the trained model is not verified. Thus, it is not deemed that the description discloses the claimed invention together with working examples supported by facts such as experiments. IP Viet Nam agrees with this comment. In response to Q18-2, IP Viet Nam stated, 'We also consider the results of examples or embodiments would not be replaced by the presumption of the trained data in order to

support the claimed invention'.

In response to Q19, IP Viet Nam stated that if it examines Case Example 2, 'The IP Viet Nam would take an office action wherein Claim 1 would be rejected by the reasons not meeting the standard of enablement requirement under Article 102 of the Law on Intellectual Property (No. 50/2005/QH11)'. Further, regarding Q19-1 on what technical fields IP Viet Nam requires applicants to submit embodiments or results of an experiment for sufficient disclosure of the invention, IP Viet Nam responded as follows.

> 'The fields of applications would fall under this requirement are included in chemicals, pharmaceuticals, alloy or compositions. At present, we have no specific rules or guidelines for such requirements yet'.

Regarding Q19-2 on whether there is a case that IP Viet Nam has shown 'sufficient disclosure' to an applicant, IP Viet Nam responded as follows.

> 'The IP Viet Nam has not yet experienced any concrete examples, which can be shared with the ERIA Research Project, that the 'sufficient disclosure' is subsequently met by supplementing embodiments or experimental results to the original description of the invention. In this regard, the office does not yet take any measures to inform the applicant of how the description should be sufficiently disclosed being supported by the data for enablement verification'.

The response to Q19-3 is, 'The IP Viet Nam has not received any requests from the applicant for them to enable them to submit the AI-generated estimation data to the office in order to support enablement requirement. The office however realizes that the presentation of full concrete embodiment data sometimes involves costs and labor for the IP users'.

These responses imply that concrete embodiment data may be replaced by computed data alone in the future. This can be consistent with the response to Q21, which is:

> 'We will produce explicit and specific rules or guidelines in our office to cope with this issue, i.e., AI-generated data as supplement presentation of data. However, with constrained resources in the IP Viet Nam, we should focus on enriching and completing Annexes relating to Computer Software/Program-Related Inventions to deal with such issues in the future'.

In this context, IP Viet Nam further asked whether the JPO grants a patent for an invention only by submitting and disclosing computer-generated data if the above conditions are satisfied. ERIA then responded that computation-based analyses or designs in optics are well known to those skilled in the technical field of optics, and such analyses or product designing are conventionally carried out. Under such circumstances, ERIA mentioned that

the JPO might duly refer to computer-generated data.

Through this exchange of opinions, ERIA observed and commented that if the AI-generated data is verified, its reliability is enough. It becomes well-known knowledge as a substitutable basis for actual experiment data, and such data would be accepted by the patent examination. It would set a new standard for the examination in IP Viet Nam. It would probably compensate for the balance between the applicant's cost for generating experiment data and the fulfillment of patent examination requirements for the future.

Regarding the enablement requirement of examples based on data generated by the use of AI or other computers, IP Viet Nam recognised that discussions and examination guidelines for patent examination would be needed in the future.

Case Example 3: Eligibility

a) Conclusion: IP Viet Nam agrees with JPO's conclusion that the inventions of Claims 1 and 2 do not satisfy patent eligibility.

b) Explanation:

Regarding Q22-1, IP Viet Nam opines that Article 59 stipulating the eligibility of invention defines subject matters that are not protected as patents as described below.

'Unpatentable inventions' or 'subject matters not protected as inventions' are under Article 59 of the Law on Intellectual Property (No. 50/2005/QH11).

(Reference)

Article 59: *Subject matters not protected as inventions*

The following subject matters shall not be protected as inventions:

1. *Scientific discoveries or theories, mathematical methods;*
2. *Schemes, plans, rules and methods for performing mental acts, training domestic animals, playing games, doing business; computer programs;*
3. *Presentations of information;*
4. *Solutions of aesthetical characteristics only;*
5. *Plant varieties, animal breeds;*
6. *Processes of plant or animal production which are principally of biological nature other than microbiological ones;*
7. *Human and animal disease prevention, diagnostic and treatment methods.*

Article 59(3) stipulates 'Presentations of information'. This subject matter in the article corresponds to 'mere presentation of information' in the Japanese Examination Guidelines.

Thus, in Q22-2, Q23-1, and Q23-2, IP Viet Nam agrees. Regarding Q22-3, IP Viet Nam agrees with Q22-3, which states, 'The examples of "presentation of information" are audible signals, spoken words, visual indicators, presentation of image or symbols, disk of games, game discs, displaying data as numerical values, as color-coded display and so on'.

Finally, regarding Q24, IP Viet Nam responded that for Case Example 3, an office action would be issued because the subject matters of inventions of Claims 1 and 2 are not protected under patents under Article 59.

Apart from the questionnaire, the deliberation of this time, addition of examples on the patent eligibility is reported. Case Example 1 of phase 1 of this research report is utilised. Public comments were solicited from people concerned on 4 February 2023. IP Viet Nam plans to enrich examples and explanations for them in the annex in the future because the modification of guidelines per se is time-consuming, involving complicated administrative or approval procedures. The addition of examples to the annex is simpler and more flexible to updating than modifying or revising the guidelines.

(End of section for Viet Nam)

7. BN: BruIPO – Brunei Darussalam Intellectual Property Office

7.1. BN: Section 1

According to Q1, Brunei has Patents Order 2011, and provisions related to this research include Section 13 for patentability, Section 14 for novelty, and Section 15 for inventive step. Further, Rule 22 stipulates the description requirement.

According to Q11 and Q13-3 in the prior questionnaire, the substantive examination is outsourced to the Denmark Patent and Trademark Office. There are no examination guidelines or collection of cases related to new technologies.

7.2. BN: Section 2

No responses were made on the three case examples of the JPO due to the above reasons.

(End of section for Brunei)

8. KH: DIP/MISTI – Department of Industrial Property of Cambodia Ministry of Industry, Science, Technology and Innovation

8.1. KH: Section 1

Based on the response of the Ministry of Industry, Science, Technology and Innovation/Department of Industrial Property of Cambodia (DIP/MISTI) to the questionnaire distributed in advance, the status of development of patent laws, examination guidelines, etc., relating to the examination of emerging technology–related inventions, and how to proceed with the examination of emerging technology–related inventions in the Kingdom of Cambodia are summarised below.

1) Status of development of patent law and examination guidelines, etc., relating to the examination of emerging technology–related inventions

1.1) Patent Law

The Kingdom of Cambodia has the Law on Patents, Utility Model Certificates, and Industrial Designs signed on 22 January 2003. Article 3 of the law defines 'patent' and 'invention', and Article 69 defines 'utility model'. 'Invention' means an idea of an inventor that permits in practice the solution to a specific problem in the field of technology. 'Utility model' means any new invention that is industrially applicable and may be, or may relate to, a product or process.

Chapter 2 on patents provides for the examination of emerging technology–related inventions. Further, Section 3 on 'Special Provisions Relating to Utility Model Certificates, under Chapter 3, 'Utility Model Certificates', specifies that three patent requirements – novelty, inventive step, and industrial applicability – shall not apply in the case of inventions for which utility model certificates are requested. (Articles 5 and 7 of this law shall not apply in the case of inventions for which utility model certificates are requested [Article 71], and the Registrar shall not decide on whether patent requirements are fulfilled [Article 72]). Utility models are registered with no examination.

According to the response to Q1 on what intellectual property (patent) laws or regulations cover the grounds for patent eligibility, novelty, inventive step, and description requirements in Cambodia, Articles 5 and 3 of the Patent Law are related to the patent eligibility of emerging technology–related inventions. Article 3 (in particular, paragraph 2) defines 'invention' as an idea of an inventor that, if applied, provides a solution to a specific problem in the technology field.

Further, though not specially stated in the response to Q1, Article 4 stipulates: 'The following

inventions shall be excluded from patent protection: (i) discoveries, scientific theories and mathematical methods; (ii) schemes, rules or methods for doing business, performing purely mental acts or playing games'. The Patent Law does not have a provision that denies the patent eligibility for the presentation of information, a computer program, or a recording medium. However, the declaration on the procedure for the grant of patents and utility model certificates promulgated 28 May 2007 (No. 766, Ministry of Industry, Mines and Energy, stipulating Regulations for implementation of the Patent Law) provides that a computer software–related 'invention' includes product inventions, such as machine-readable computer program codes stored on a tangible medium like a computer-implemented floppy disk, computer hard drive or computer memory, and a general-purpose computer whose novelty over the prior art arises primarily due to its combination with a specific computer program (Rule 44). It explicitly states that a recording medium has patent eligibility. On the other hand, Rule 44 does not refer to a computer program itself as computer software–related 'invention'. It is considered that the opposite interpretation is that a computer program itself is ineligible for a patent.

Article 5 stipulates that 'An invention can be patentable if its new, involves an inventive step and is industrially applicable'. An invention, not limited to an emerging technology–related invention, shall be new, involve inventive steps, and be industrially applicable to obtain a patent.

Article 6 provides that 'An invention is new, if it is not anticipated by prior art. The grace period is 12 months'.

Article 7 states that 'An invention shall be considered as involving an inventive step if it would not have been obvious to a person having ordinary skill in the art'.

Regarding industrial applicability, Article 8 explicitly states that 'an invention shall be considered industrially applicable if it can be made or used in any industry' (extracted from Article 8).

Article 18, which is related to the enablement requirement, stipulates that the description shall disclose the invention in a manner sufficiently clear and complete for the invention to be carried out by a person having ordinary skill in the art and shall, in particular, indicate the best mode known to the applicant for carrying out the invention, at the filing date or, where priority is claimed, at the priority date of the application. Article 18 requires an applicant to indicate the best mode.

Section 6 (Articles 30 to 32) of Cambodia's Patent Law allows to request an applicant to submit information on corresponding foreign applications. Section 7 (Articles 33 to 37)

prescribes the examination procedure by the registrar of the patent authority (DIP/MISTI) in Cambodia. First, the applicant shall, at the request of the registrar, furnish him with the date and application number of any patent application filed by the applicant abroad ('foreign application') relating to the same or essentially the same invention as claimed in the application in Cambodia. The applicant shall furnish the registrar with the following documents: (i) a copy of any communication received by the applicant concerning the results of any search or examination carried out in respect of the foreign application, (ii) a copy of the patent granted based on the foreign application, (iii) a copy of any final decision rejecting the foreign application or refusing the grant requested in the foreign application (Articles 30 and 31). The applicant shall, at the request of the registrar, furnish him with the date and number of any application for a patent filed by him abroad ('foreign application') relating to the same or essentially the same invention as that claimed in the application filed with the ministry in charge of industry (Article 30). In Article 31, the applicant shall, at the request of the registrar, furnish him with the following documents relating to one or more of the foreign applications referred to in Article 30 of this law: (i) a copy of any communication received by the applicant concerning the results of any search or examination carried out in respect of the foreign application, (ii) a copy of the patent granted based on the foreign application, and (iii) a copy of any final decision rejecting the foreign application or refusing the grant requested in the foreign application. When the registrar decides whether the patent requirements are fulfilled, the registrar shall consider (i) or (iii) (Article 37 [ii]). Note that the registrar shall consider the results of any international search report and any international preliminary examination report when the application is filed under the PCT. If both of them are not available, the registrar considers a search and examination report carried out upon his request by an external search and examination authority (Article 37 [i] and [iii]). Article 37 provides that, for the purpose of Article 36, the registrar takes into account the following: (i) the results of any international search report and any international preliminary examination report established under the PCT related to the application; and/or (ii) a search and examination report submitted under item (i) of Article 31(1) of this law relating to, or a final decision submitted under item (iii) of the Article 31, paragraph 1 of this law on the refusal to grant a patent on a corresponding foreign application; and/or (iii) a search and examination report carried out upon his request by an external search and examination authority.)

Given the foregoing, the registrar can finally determine whether the patent requirements are fulfilled based on the results of an external search or any search or examination conducted by the examination authority. Thus, under Cambodia's Patent Law, the patent authority (DIP/MISTI) does not conduct substantive examinations.

1.2) Examination guidelines, working manuals, handbook, etc., relating to the examination of emerging technology–related inventions

Regarding Q2 on whether your office facilitated the formulation of the examination guidelines on emerging technology–related invention with ERIA Research 2019–2020 (first phase or phase 1) as an impetus, DIP/MISTI responded as follows.

> 'We will consider incorporating this new emerging technology in the guidelines in the future. As for now, we are relying on the foreign patent office for patent search/examination results, and we don't have and haven't developed any patent examination guidelines for ourselves. However, there's patent examination guidelines for ASEAN member states and it is now under development and thorough our internal discussions'.

DIP/MISTI responded 'No' to Q3 – whether the examination guidelines of your office are already available in the form of a document (either on paper or electronically) – and Q5 – on whether the discussions have been carried out in the office or nationwide to deliberate further how the patent examination should be conducted for the emerging technology– and AI-related inventions.

Regarding Q8 on the development or preparation status of the examination guidelines after the first phase, and Q9 on the progress in facilitating working manuals or handbooks, DIP/MISTI responded as follows, respectively.

> 'There are no patent guidelines available for Cambodia'.

> 'So far, there is no progress in preparing 'working manuals' or 'handbooks' yet'. Thus, no particular progress is observed since the first phase.

In view of the above, DIP/MISTI can rely on the above foreign patent office's having a cooperative relationship (for substantive examination). Therefore, it has not yet prepared the examination guidelines (or working manuals, handbooks, etc.) There are no examination guidelines on emerging technology– or AI-related inventions. DIP/MISTI has no staff with an AI technology background or experience in the examination of AI technologies.

Currently, DIP/MISTI conducts only formality examination. For substantive examination, DIP/MISTI asks an applicant to submit copies of documents on the examination results prepared by other offices (China National Intellectual Property Administration [CNIPA], European Patent Office, JPO, Korean Intellectual Property Office [KIPO], United States Patent and Trademark Office [USPTO], and IPOS) having a cooperative relationship. If the content of the corresponding invention examined by the other office is identical to that of the invention filed with DIP/MISTI, DIP/MISTI grants a patent.

Since DIP/MISTI conducts the examination in such a manner, it currently has no examination guidelines. However, based on the response to Q2, it has an expectation of ASEAN patent examination guidelines, which are under progress.

2) How to proceed with the examination of emerging technology–related inventions

Regarding Q11 on whether there is any progress or change after the first phase concerning how your office, in practice, deals with a patent application of AI-related invention, DIP/MISTI responded as follows.

> 'No progress or changes are made yet. Thus, as this office replied in the ERIA Research 2019-2020, it is the DIP's Patent Office that deal with patent applications for the emerging technologies. With regard to the qualifications of patent examiners, they have various backgrounds. And, presently, any specific background is not yet required for dealing with patent application'.

The response in the ERIA Research 2019–2020 was that under Cambodia's Patent Law, the patent office (currently, DIP/MISTI) conducted only formality examination and no substantive examination. In practice, the registrar, not the examiner, determines whether the patent requirements are satisfied. There is no examiner for substantive examination at DIP/MISTI. Given this response, 'examiner' in the above response to Q11 means an examiner for formality examination.

Further, regarding Q12 on what is difficult (or required) to establish new practical patent examination guidelines dedicated to assessing patentability and description requirements for emerging AI–related inventions, DIP/MISTI responded as follows.

> 'Presently, this patent office relies on the other IP offices for patent search/examination results, especially, on the IP5 and IPOS offices through acceleration cooperation programs. Thus, there is no difficulties we know of'.

According to the response to Q14 in the phase 1 questionnaire, the following four international cooperations have been taking place between DIP/MISTI and other IP offices for the direct approval (omission or simplification of substantive examination) of the results of search and examinations conducted by other IP offices: (i) cooperation for facilitating patent grant with the JPO; (ii) patent cooperation with the KIPO and USPTO; (iii) patent validation agreement with EPO; and (iv) re-registration of patent with IPOS and CNIPA. In view of the above, it is considered that the IP5 in the response to Q12 means CNIPA, EPO, JPO, KIPO, and USPTO.

Further, regarding Q13-1 on the number of AI/IoT applications received so far (or by year) and the number of such applications that the office has (had) started/finished the examination of, DIP/MISTI responded as follows.

> 'Number of AI/IoT applications received so far: 5; Number of such applications in process (processed): G06N3: 5 applications, 4 have been granted. G06N5: N/A. G06N20: N/A'.

On Q13-2, on the total number of staff members and the number of patent examiners (amongst them, the number of examiners who may deal with AI/IoT applications), DIP/MISTI responded as follows.

> 'Total number of staff members: 21 people are in the DIP/MISTI; Number of patent examiners: None (3 patent formality examiners; Number of patent examiners in charge of AI-related inventions: None'.

The response in the first phase was that the total number of staff members was four, and three dealt with the patent examination of all of the applications. Thus, the number of staff members has increased after the first phase.

Moreover, regarding Q13-3 on whether this ERIA research helps draw DIP/MISTI's attention to future patent examination for emerging technologies and whether it wishes to keep conducting this type of deliberations so that each ASEAN office would develop its own sense of assessing patentability for such new technologies, DIP/MISTI made no response.

8.2. KH: Section 2

Summarised below are DIP/MISTI's opinions on each of the three case examples prepared by the JPO.

Case Example 1: Novelty

No response on Case Example 1 of the JPO.

Case Example 2: Description Requirements

No response on Case Example 2 of the JPO.

Case Example 3: Eligibility

The response to Q22-1 on which provisions in your patent laws, regulations, or examination guidelines in Cambodia expressly provide for 'unpatentable inventions,' DIP/MISTI

responded 'Article 4 and Article 9 of the Patent Law of Cambodia'. The response explains that the inventions excluded from patent protection under Articles 4 and 9 of the Patent Law of Cambodia are as follows.

> *Article 4: The following inventions shall be excluded from patent protection:*
>
> *(i) discoveries, scientific theories and mathematical methods;*
>
> *(ii) schemes; rules or methods for doing business, performing purely mental acts or playing games;*
>
> *(iii) methods for treatment of human or animal body by surgery or therapy, as well as diagnostic methods practiced on the human or animal body; this provision shall not apply to products for use in any of those methods;*
>
> *(iv) pharmaceutical products as provided in Article 136 of this Law;*
>
> *(v) plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals; and*
>
> *(vi) plants varieties.*
>
> *Article 9 of the Patent Law of Cambodia:*
>
> *The inventions, the commercial exploitation in the Kingdom of Cambodia of which would be contrary to public order or morality, or would not be protected human, animal or plant life or health, or would cause serious prejudice to the environment, or prohibited by law, are excluded from patentability.*

Regarding Q22-2 on 'mere presentation of information' is included in the list of unpatentable inventions (list of exclusions), DIP/MISTI made no response.

Further, no responses to Q22-3, Q23-1, Q23-2, and Q24 were made.

Given the response to Q22-1, it seems that the Patent Law of Cambodia does not categorise 'presentation of information' or 'mere presentation of information' as inventions excluded from patent protection. However, whether an application like Case Example 3 is protected as a patent in Cambodia is unclear.

(End of section for Cambodia)

9. LA: Laos DIP – Lao PDR IP Department

9.1. LA: Section 1

Summarised below are responses of the Lao People's Democratic Republic (PDR), Ministry of Industry and Commerce, Department of Intellectual Property (Laos DIP: DIP/MOIC) to the questionnaire on the status of development of the Law on Intellectual Property, patent examination guidelines, etc., relating to the examination of emerging technology–related inventions, and how to proceed with the examination of emerging technology–related inventions in the Lao PDR.

1) Status of development of the Law on Intellectual Property, patent examination guidelines, etc., relating to the examination of emerging technology–related inventions

1.1) Intellectual Property Law

The Lao PDR does not have any independent patent law nor petty patent (utility model) law. The Law on Intellectual Property (Law No. 38/NA of 2017), amended on 15 November 2017, has provisions on patents and petty patents. Article 3 on 'Definitions' defines 'patent', 'invention', 'petty patent', and 'utility innovation'.

These definitions explicitly state that 'invention' and 'utility innovation' are products obtained through a technical solution to create a new product or process of production to resolve a specific problem. Utility innovation includes products and methods.

Part III on 'Industrial Property' provides for patents and petty patents relating to the examination of emerging technology–related inventions.

According to the response to Q1 on what IP laws or regulations are grounds for patent eligibility, novelty, inventive step, and description requirements in the Lao PDR, Articles 3(5) and (7) of emerging technology– or AI-related inventions require particular attention. The former requires that inventions and utility innovations be the technical solution to create new products or processes of production to resolve a specific problem. The latter specifies that Inventions or utility innovations ineligible for patents or petty patents shall be '2. Subject matter that is not an invention does not constitute a technical solution because it is merely a scientific principle or theory, a mathematical algorithm, or a set of rules for doing business or playing games, provided however, that such subject matter may constitute an element of an invention or utility innovation'. The proviso of the latter is considered to specify that the patent eligibility is not denied only because a part of the elements of an invention

or utility innovation is the subject matter as above. Note that no provision denies the eligibility of presentation of information, computer programs, or recording media.

To obtain a patent for an invention or utility innovation, not limited to emerging technology–related inventions, the invention or utility innovation must be new, involve an inventive step, and be industrially applicable (Articles 13 and 14).

(Reference)

Article 13 (revised): *Patent Eligibility Requirements*

An invention eligible for a patent shall meet the following requirements: 1. Shall be new meaning that such invention has not been existed, not been disclosed to the public by journal or by actual use or in any other means in the Lao PDR or any place in the world prior to the date of filing the application for registration or prior to application for priority date for such patent; 2. Shall involve increased inventive steps compared to previous Invention; 3. Shall be industrially applicable in industry, handicraft, agriculture, fishery, trade, services, etc.

Article 14 (revised): *Petty Patent Eligibility Requirements*

A utility innovation eligible for a petty patent shall meet the following Requirements: 1. Shall be new in the sense that it has not been previously known or used in the Lao PDR within one year prior to the date of submitting an application; 2. Shall have new technical improvement that involves an inventive step which has easier inventive steps than required for a patent; 3. Shall be applicable in industry, handicraft, agriculture, fishery, commerce, services, etc.

However, the criteria for being new and involving an inventive step differ between invention and utility innovation. Specifically, the novelty requirement for a patent is that 'an invention shall be new meaning that such invention has not been existed, not been disclosed to the public by journal or by actual use or in any other means in the Lao PDR or any place in the world prior to the date of filing the application for registration or prior to application for priority date for such patent'.

On the other hand, the novelty requirement for a petty patent is that 'a utility innovation shall be new in the sense that it has not been previously known or used in the Lao PDR within one year prior to the date of submitting an application'. In addition, the inventive step requirement for a patent is that 'an invention shall involve increased inventive steps compared to previous invention'. On the other hand, the inventive step requirement for a petty patent is that 'a utility innovation shall have new technical improvement that involves an inventive step which has easier inventive steps than required for a patent'. Further, the articles explicitly state that 'industries' to which both a patent and a petty patent are applicable include services.

Article 31 specifies the description requirements for claims and descriptions. Item 3 specifies the enablement requirement, while item 4 specifies the clarity and support requirements. Item 3 specifies that 'an application for a patent or petty patent shall include the following Documents: "3. Description that discloses the invention or utility innovation in such clear and complete terms as to enable a person of ordinary skill in the relevant field of technology to understand and exploit the invention or utility innovation; the description shall disclose the best mode of making or using the invention or utility innovation'.

The Law on Intellectual Property of the Lao PDR includes Articles 40 and 41 on substantive examination. Article 40 specifies that both patent and petty patent applications are subject to substantive examination.

(Reference)

Article 40 (revised): *Substantive Examination of Industrial Property Applications*

After completion of formality examination of the application, the Ministry of Science and Technology will examine as to substance the invention, utility invention, industrial design, trademark and geographical indication applications for Registration. The layout-design of integrated circuit registration application is not examined as to substance.) Specified next is that, where the application has previously been subject to a search or examination by a foreign patent or IP office, the applicant may submit to the Ministry of Science and Technology of Laos a copy of the search/examination report by such foreign office, and request the Ministry to find no need of conducting any further search (naturally, such submission of a copy by the applicant is in the case where the applicant has obtained a positive report on the patent requirements with respect to the subject foreign application)

Article 41 (revised): *Claim to Carry out Substantive Examination of Industrial Property Applications*

An application for a patent is subject to a substantive examination to determine whether it meets the requirements for patentability or for obtaining a petty patent as described in this law. The substantive examination shall be based on a search of existing technical knowledge. Where the application has previously been subject to a search or examination by another authority the applicant shall submit a copy of the report of such authority and request the Ministry of Science and Technology to consider issuing patent and petty patent without conducting any further search.

If the applicant is unable to provide substantive examination reports for the invention or utility innovation which is the subject of the application, the applicant may submit a request to the Ministry of Science and Technology to examine as to substance The application.

The Ministry of Science and Technology will undertake the examination within the following time frames thirty-two months for an invention and twelve months for a utility innovation from the date of filing the application or the priority date.

However, all expenses incurred in the request for the examination of the invention or utility innovation registration application shall be the burden of the requestor. The expenses for the substantive examination depend on determination of each patent office of another country or of international organization dealing with examination of patent which shall conduct such substantive examination Periodically. The registration applications for industrial design, integrated circuit layout-design, trademark and geographical indication will not be requested to examine as to substance.

According to the response of Laos DIP (then DIP/MOST[1]) to the questionnaire of the ERIA Research 2019–2020, upon receipt of the request as above, the examiner of Laos DIP reviews the search/examination results by the foreign office and checks and confirms that the claims of the Lao PDR application are identical with those of the subject foreign application. If identical, the examiner finds no need to conduct any further search. Consequently, a patent for the Lao PDR application is granted. Even if not identical, the examiner invites the applicant to amend the claims to make them identical with those of the subject foreign application and, if amended, finds no need to conduct any further search. If there are a plurality of foreign applications for each of which the applicant has received a positive report on the patent requirements and whose claims are not identical, the applicant must select which foreign office's claims the applicant relies on. If the applicant does not submit any search/substantive examination report by a foreign office and requests a substantive examination, Laos DIP should conduct a substantive examination of the application as filed.

1.2) Examination guidelines, working manuals, handbooks, etc., relating to the examination of emerging technology–related inventions

On Q2, whether your office understand the necessity of patent examination guidelines on emerging technology–related inventions and facilitated the formulation of the guidelines with the first phase as an impetus, Laos DIP responded 'Yes' on the understanding of the necessity while 'No' to facilitate the formulation. Further, regarding Q3 on whether the examination guidelines of your office are already available in the form of a document (either on paper or electronically), and Q5 on whether the discussion has been carried out in the office or nationwide to deliberate further on how patent examination should be conducted for the emerging technology– and AI-related inventions, Laos DIP responded 'No' to both questions.

[1] MOST = Ministry of Science and Technology.

Further, regarding Q8 on the development or preparation status of the examination guidelines after the first phase, and Q9 on the progress in facilitating working manuals or handbooks, Laos DIP responded as follows, respectively.

> 'No updates yet, since the ERIA Research 2019–2020. We, Laos DIP, have just moved to new government jurisdiction under Ministry of Industry and Commerce from the former umbrella organization, i.e., Ministry of Science and Technology. We also make some revisions on Ministerial Decision in the last step and are waiting for Minister's signing. After such administrative procedures, the Laos DIP will have internal discussions concerning the guidelines for specific technologies'.

> 'No progress in preparing working manuals for patent examination is made yet. The Laos DIP however has the working manual with regard to the formality examination'.

Thus, no particular progress is observed since the first phase.

Furthermore, regarding Q10 on whether the examination guidelines include (or should include in the future) concrete examples that would contribute to a better understanding of AI-related technologies and their patentability, the Laos DIP responded as follows.

> 'In order to make or revise patent examination guideline, I think we should include many concrete examples as much as possible. We also would like to add the examples concerning any technical fields for more clearly understanding'.

2) How to proceed with the examination of emerging technology–related inventions

Regarding Q11 on whether there is any progress or change after the first phase to how your office, in practice, deals with a patent application of AI-related invention, Laos DIP responded as follows.

> 'Patent Division is in charge of dealing with such applications. Now we have only one examiner, the only way that we can deal with those applications is relying on the results of the search and examination which are not contrary with our Law, at least "culture and the fine traditions of the nation. Thus, Laos DIP should only wait for the S&E results to come'.

Laos DIP also stated that 'currently, the Laos DIP (then) has one substantive examiner'. Thus, there is no increase in the number of staff members.

Regarding Q12 on what is difficult (or required) to establish new practical patent examination guidelines dedicated to assessing patentability and description requirements for emerging AI–related inventions, Laos DIP responded as follows.

> 'As a small IP office which lacks enough technological knowledge and expertise of this kind, we would like to share almost all concerns raised by other ASEAN IP offices to handle such patent applications. Since the Laos DIP does not conduct substantive patent examination by itself, difficulties this office faces might be even severer than other IP offices'.

In response to the questionnaire of the first phase, Laos DIP (then, DIP/MOST) stated that it did conduct formality examination but did not conduct a substantive examination. It entrusted substantive examination through cooperation with relevant foreign IP offices or organisations (specifically, IPOS). We have found that Laos DIP has not yet conducted a substantive examination.

Further, regarding Q13-1 on the number of the AI/IoT applications received so far (or by year), and the number of such applications that the office has (had) started/finished the examination of, Laos DIP responded as follows.

> 'Number of AI/IoT applications received so far: N/A; Number of such applications in process (processed): N/A'.

Regarding Q13-2 on the total number of staff members and patent examiners (amongst them, the number of examiners who may deal with AI/IoT applications), Laos DIP responded as follows.

> 'Total number of staff members (Patent Unit): 4; Number of patent examiners: 1; Number of patent examiners in charge of AI-related inventions: None'.

Laos DIP made no response to Q13-3 on whether this ERIA research helps draw the office's attention to future patent examination for emerging technologies and whether it wishes to keep conducting this type of deliberations so that each ASEAN office would develop its own sense of assessing patentability for such new technologies.

In response to the questionnaire of the first phase, Laos DIP (then, DIP/MOST) stated as follows.

> 'Though the examination guidelines (or working manuals, handbooks, etc.) were prepared under the assistance of the JPO, they are not effective at present and have to be revised (because it seems that they are not compatible to the IP Law revised in 2017)'.

DIP/MOST entrusts substantive examination to other IP offices, which carry out under the examination guidelines. Meanwhile, DIP/MOST is revising guidelines such that these would reflect technology advancements. The new guidelines may be an impetus for DIP/MOST to

start substantive examination (the response to Q14 of the first phase). Regarding AI-related inventions, the response to Q15 to the first phase is as follows.

> 'We have no plan for the guidelines addressing the emerging technologies, but we would like to follow international regulations; ASEAN Common Guidelines are planned to be prepared and they include emerging technologies; and based on the current examination practice and the action plan to establish patent examination guidelines in the near future, we would use the above guidelines together with the guidelines prepared in the past with the cooperation of the JPO'.

However, in view of the responses to Q9, Q10, and Q12 of the second phase, it seems that the Laos DIP has not yet conducted substantive examination, and subsequent revision works of the examination guidelines have not been advanced.

9.2. LA: Section 2

Laos DIP's responses to the questionnaire on the three case examples prepared by the JPO are summarised below.

Case Example 1: Novelty

a) Conclusion: Laos DIP does not agree with JPO's conclusion that Claim 1 lacks novelty and Claim 2 has novelty.

b) Explanation: The responses to Q14-1, Q15-1, Q15-3, and Q16 are summarised below.

Regarding Q14-1 on whether the office agrees with the way of claiming combination inventions, referred to as combination or sub-combination claim, in light of patent-related laws and regulations in the Lao PDR, Laos DIP responded as follows.

> 'Agree. We would agree with the condition (a) which both are collaboratively work in pairs. In such a case, the related part cannot be used to deny a Novelty issue'.

In addition, on Q15-1, Laos DIP disagreed with JPO's reasoning for the conclusion that Claim 1 of Case Example 1 lacks novelty. However, regarding Q15-3 on why this claimed invention meets novelty requirement, unlike the JPO's denial if the Laos DIP disagrees with JPO's reasoning, the Laos DIP has made no response.

Further, regarding Q16 on what would be the results or possible office actions after assessing the novelty if Laos DIP examines Case Example 1, the Laos DIP responded as follows.

> 'The result would be that "case example 1 meets the Novelty requirement'. It is because the program itself, of course, lacks novelty, but this case is that the both elements work together and then create a new usage or useful method that we called it as "IoT"'.

Given the above responses regarding the novelty of an invention according to a claim including a description to specify the relationship with another entity (not part of the claimed entity) (a claim of this type is called 'sub-combination' by the JPO), Laos DIP's approach is different from JPO's.

Case Example 2: Description Requirements

a) Conclusion: Laos DIP agrees with JPO's conclusion that the description does not provide a clear and sufficient disclosure to enable a person skilled in the art to carry out the invention as in Claim 1.

b) Explanation: The responses Q17-1, Q17-3, Q18-1, Q18-2, Q19, Q19-1, and Q21 are put together as follows.

Case Example 2 is used to contemplate the issue of how the invention is sufficiently disclosed by the evidence of embodiment, such as working examples or results of an experiment, in a case where the invention (typically pharmaceutical products) is of a kind that needs to be supported by data to meet the 'enablement requirement'. Q17-1 is on whether Laos DIP agrees with such 'enablement requirement' in light of Laotian patent laws and regulations. The Laos DIP responded 'Agree'.

Further, Q17-3 is on whether there is an exemption wherein the enablement requirement is satisfied even if no actual experimental data is shown in the description, and whether there is an exemption if the claimed invention is a common general technical knowledge or if AI-related technologies furnish the claimed invention with estimated data or any other information required. Laos DIP responded to this question as follows.

> 'Concerning the description requirement, it should be provided as a best practice that the relevant information should be provided as much as possible. So, we think that the applicant should not enjoy exemption. If the claimed invention is a common general technical knowledge, it is to be determined that such invention lacks inventive step in most of cases. If AI-related technologies furnish the claimed

invention with estimated data or any other information required, such information mentioned should be prescribed in a description and is treated as a reference'.

The JPO concludes that 'the description only discloses that a trained model 'predicted' expected results of the invention to be enabled and established; however, the disclosure does not verify the accuracy of an estimation value by the trained model; and therefore, the description does not disclose any embodiments supporting the facts of the claimed invention'.

Regarding Q18-1 requesting Laos DIP's opinions on the above JPO conclusion, Laos DIP responded 'Agree'. Further, regarding Q18-2 on whether Laos DIP would apply the same/similar argument of the JPO and refuse the application due to an insufficient disclosure (that is, an estimation value by the trained model cannot be a substitute for the results of examples or embodiments to support the claimed invention), Laos DIP responded that 'Same comments as in Response to Question No. 17-3'.

From these responses, Laos DIP agrees with JPO's conclusion in Case Example 2, but Laos DIP differs from JPO's thinking.

Furthermore, regarding Q19 on the results or possible office actions if Laos DIP examines Case Example 2 and assesses whether the claimed invention is disclosed sufficiently, Laos DIP responded as follows.

> 'We may request the applicant to provide more information with the office for supporting the disclosed subject matter as detail as possible, for all of the related elements shall be prescribed in the description. (Article 18 of Ministerial Decision)'.

Further, regarding Q19-1 – for what technical fields Laos DIP requires applicants to submit embodiments or results of an experiment for sufficient disclosure of the invention – Laos DIP responded that 'The embodiments or results of experiments may be required for any kinds of inventions'.

Laos DIP made no response to Q19-2, whether it takes any measures to inform the applicant of such 'sufficient' presentation of data for enablement verification.

Further, regarding Q19-3 on whether Laos DIP receives any requests or complaints by the applicant or parties concerned requesting that Laos DIP accept the AI-generated estimation data to satisfy the enablement issue, Laos DIP made no response.

Also, Laos DIP has made no response to Q19-4.

Laos DIP also did not respond to Q20 on what the laws, regulations, or patent examination guidelines would stipulate such exception of the 'enablement requirement'.

Regarding Q21 on whether Laos DIP would envisage any possibility for the office to accept AI-generated data such as the estimation value of the trained model, instead of working examples or experimental results as those satisfying the enablement requirement, and if so, whether Laos DIP already has or will formulate any explicit rules or guidelines, the response is as follows.

> 'We may require the applicant to present the embodiment or experiment data generated by AI. If the office decides to do so, we should establish rules or guidelines to expressly indicate the procedures'.

In view of this response, AI-generated data such as the estimation value of the trained model may be accepted in the Lao PDR, instead of working examples or experimental results, as those satisfying the enablement requirement in the future.

Case Example 3: Eligibility

Regarding Q22-1 on which provisions in the country's patent laws, regulations, or examination guidelines expressly provide for 'unpatentable inventions,' Laos DIP responded 'Article 21 of IP Law (Revised) No. 38/NA, dated 15 November, 2017; Ministerial Decision on Patent and Petty Patent No. 1714/MOST, dated 15 December 2020'. With regard to Q22-2 on whether 'mere presentation of information' is included in the list of unpatentable inventions (list of exclusions), if any, Laos DIP responded, 'We have no list of exclusion'.

In this connection, Article 21 of the revised IP Law (No. 38/NA, dated 15 November 2017) expressly stipulates the list of unpatentable inventions (list of exclusions), which does not include 'presentation of information' or 'mere presentation of information'. Thus, the response to Q22-2 means Laos DIP does not have a list of exclusions including 'mere presentation of information.'

(Reference)

Article 21 (revised) - Inventions or Utility Innovations Ineligible for Patents or Petty Patents

Inventions or utility innovations ineligible for patents or petty patents shall be as follows:

1. inventions or utility innovations that are not novel, if they are discovered exists, including living organisms or parts of living organisms that exist in nature;

2. subject matter that is not an invention does not constitute a technical solution because it is merely a scientific principle or theory, a mathematical algorithm, or a set of rules for doing business or playing games, provided however, that such subject matter may

constitute an element of an invention or utility innovation;

3. diagnostic, therapeutic and surgical methods for the treatment of humans or animals; and

4. plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals provided however, that such subject matter may constitute an element of an invention or utility innovation.

A patent or petty patent shall be refused, in any case, if:

1. It is contrary to culture and fine traditions of the nation, social orders and morale, damage human, animal or plant life or health or cause serious prejudice to the environment;

2. It is contrary to security and peace of the Lao PDR.

In addition, the JPO concludes that both Claims 1 and 2 do not specify any means for or a method of presenting the sugar content data of apples, both data do not have technical features in the presentation of information (presentation per se). Thus, the feature resides solely in the content of the information, and its main objective is to present information. Q23-1 asks for Laos DIP's view on JPO's conclusion. Laos DIP's response is 'Agree'.

Regarding Q23-2 – whether Laos DIP, if it agrees with JPO's conclusion, will apply the same/similar argument of the JPO and refuse the application because the claimed subject matter falls under the category of unpatentable 'mere presentation of information' – Laos DIP responded as follows.

> 'Yes, we may give the same conclusion with the same reasons presented by the JPO to refuse such applications'.

On Q24 – what would be the results or possible office actions if Laos DIP examines Case Example 3 and assesses the 'eligibility' of the claimed subject matter (also, applicable provisions) – Laos DIP responded, 'Yes, we may give the same conclusion with the same reasons presented by the JPO to refuse such applications'.

Given the responses to Q21-1, Q23-1, Q23-2, and Q24, it seems that 'presentation of information' or 'mere presentation of information'" is not included in the list of unpatentable inventions in Lao PDR's IP law. However, if an application like Case Example 3 is examined in the Lao PDR, the application should be rejected for the same reason as that presented by the JPO.

(End of section for the Lao PDR)

10. MM: Myanmar IP Department

10.1. MM: Section 1

1) Research on patent law, implementation rules, etc., relating to the examination of emerging technology–related inventions

Since the patent law has not yet entered into force as of this research (August 2023), examination guidelines or the like were not prepared. However, ERIA has received responses to the questionnaire from the Myanmar IP Department on the presumption that after the Patent Law, which Parliament had approved, will be entered into force. So, the responses would change when the Patent Law comes into force.

1.1) Patent Law

Article 14 of the Patent Law is applied in examining emerging technology–related inventions. Article 14 shows examples of inventions ineligible for patent. Computer programs are explicitly indicated amongst the examples. Thus, if an invention is directed to a computer program, its eligibility for patent would immediately be denied under Article 14(a)(iii).

1.2) Research on the current situation of examination guidelines, handbooks, etc., relating to the examination of AI-related inventions

As the Patent Law has not entered into force as of this research, patent examination guidelines or the like have not yet been prepared (Q9).

2) How to proceed with the examination of AI-related inventions

How to proceed with the examination is undecided for the Patent Law has not been into force as of the time of the research.

10.2. MM: Section 2

The opinions of the Myanmar IP Department on the three case examples prepared by the JPO and their assessments are summarised.

Case Example 1: Novelty

a) Conclusion: 'Disagree' with JPO's conclusion that the invention has no novelty.

b) Explanation: The response to Q14-1 is 'Disagree'. At the beginning of this response, the following note is found.

> 'NOTES: Myanmar IP Department replied with its best efforts to the following questions for Case Examples. The responses are however subject to further changes of our judgements especially upon the occasion of the enforcement of the Myanmar Patent Law in the near future'.

ERIA received the response although the law has not yet entered into force. The response to Q14-1 is, 'In line with Myanmar Patent Law, our department considers that the subject matter is not considered as a simple combination of two things. It seems that some additional technical matters are involved and, thus, we consider it would satisfy novelty requirement'. Regarding Q15-3, the response is, 'As explained in Q14-2, our department considers that this subject matter is not just combination'.

The response to Q16 is as follows.

> 'Since our department would conclude that the invention has novelty and expect positive result of the patent examination, the office does not need to issue any office actions. If require, office actions do for the positive result of the patent examination'.

This research did not carry out face-to-face opinion exchange meetings. An opinion exchange was thought to be effective when the patent examination started in Myanmar.

Case Example 2: Description Requirements

a) Conclusion: Agree with JPO's conclusion.

b) Explanation: In the response to Q17-1, the Myanmar IP Department agrees with JPO's opinion on the disclosure requirement of Case Example 2. Further, the response to Q17-3 is as follows.

> 'Our Patent Law Section 22(a) stipulates that the description is required to provide a sufficient disclosure of the invention. And 'sufficiency' is regarded as the disclosure of the invention is made to the extent that a person skilled in the art can apply or utilize the subject matter of the invention. In this regard, this department would principally require the applicant to submit the disclosure of the invention with the best mode to be carried out the invention by a person skilled in the art'.

Regarding Q18-1 and Q18-2, the responses are 'Agree'. The response to Q19-1 is, 'The Myanmar Patent Law does not articulate the types of inventions which this department requires the applicant to sufficiently disclose the invention supported by the experiment

data. Thus, this department basically considers that all inventions are presupposed to present experiment data, not the presumption of trained data, for the sufficient disclosure'.

The response to Q19-2 is, 'We have not yet started the substantive patent examination. Once started, we feel we need to take some measures for the applicant to understand the level of 'sufficiency' of the disclosure'. The response to Q19-3 is 'N/A'. The response to Q20 is that 'Either our Patent Law or the present Patent Regulation which is now being drafted do not stipulate any exemptions of the 'enablement requirement'. The response to Q21 is, 'N/A. Under the current status, we have no explicit rules or guidelines for that'.

Case Example 3: Eligibility

a) Conclusion: Agree.

b) Explanation: The response to Q22-1 is as follows.

> 'Patent Law Section 14(a)(i) shows discoveries, scientific theories and mathematical methods. Section 14(a)(ii) shows unpatentable inventions, such as schemes, rules and regulations or methods relating to conducting business, performing purely mental acts or playing games. And, Section 14(a)(vii) shows invention in relation to the natural substances, known substances including new uses and new forms of knows substances or chemical products prescribed from time to time'.

The response to Q22-2 is as follows.

> 'Yes. Under our Patent Law Section 14(a)(i), Sugar Content Data of Apples is just discovery and, is relation to the natural substance by Section 14(a)(vii). Method for Predicting Sugar Content Data of Apples is just a method. Thus, that invention is unpatentable'.

The way of thinking on the method for predicting sugar content data of apples (the invention of Claim 3) differs from JPO's conclusion. In this research, no face-to-face opinion exchange meeting was carried out. An opinion exchange was considered to be effective when the patent examination started in Myanmar. The response to Q22-3 is 'N/A'. The response to Q23-1 is 'Agree'.

> The response to Q23-2 is as follows.
>
> 'This department would apply the same argument as the JPO does and refuse the application. Under the Patent law, "presentation of information" is considered as "schemes" and should be categorized as one of the unpatentable subject matters'.

The response to Q24 is, 'Based on our Patent Law, the results of our office actions would rely on the assumption that the Claimed subject matter is not "eligible"'.

(Reference)

(Note: the following Section is translated into English from a Japanese translation appearing on the JETRO website.)

Chapter VIII Non-patentable Inventions

Section 14:

(a) The following inventions are non-patentable inventions:

(i) discoveries, scientific theories and mathematical methods;

(ii) schemes, rules and regulations or methods relating to conducting business, performing purely mental acts or playing games;

(iii) computer programs per se;

(iv) essentially biological processes for the production of plants or animals other than non-biological and microbiological processes;

(v) plants and animals, including animal breeds and plant varieties and including the whole or part of natural living beings and biological materials found in nature other than artificially created microorganisms, DNA (including complementary DNA sequences), cells, cell lines, cell cultures and seeds

(vi) methods for treatment of the human or animal body by surgery or therapy, and diagnostic methods practiced on human or animal body

(vii) invention in relation to the natural substances, known substances including new uses and new forms of known substances or chemical products prescribed from time to time; and

(viii) invention which is seriously prejudice to public order or morality, human beings, animals or plants, health or the natural environment, and invention for which its exploitation is prohibited by any existing law within the territory of the State.

(End of section for Myanmar)