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## Guidance on Assessing Responsible AI Use in Banking and Insurance Sectors (Veritas Phase 2)

### Executive Summary

In this digitalisation era, automation and achieving operational efficiency are buzzwords in the business community. The financial sector is no exception and have adopted Artificial Intelligence and Data Analytics ("AIDA") to facilitate decision-making processes. Along with benefits and efficiencies, the use of AIDA also carries various regulatory risks.

Globally, regulators have come up with frameworks to address these issues and to promote the responsible use of AIDA by financial institutions ("FIs"). Singapore endorses a principles-based and technology-neutral approach. The main regulatory principles and framework regarding the use of AIDA in Singapore are:

- **MAS FEAT Principles** - The Monetary Authority of Singapore ("MAS") issued a set of principles<sup>1</sup> ("**Principles**") in 2018 centred around the key concepts of Fairness, Ethics, Accountability and Transparency ("**FEAT**") to guide FIs on the responsible use of AIDA, and to strengthen internal governance around data management and use.
- **PDPC Model AI Governance** - The Model Artificial Intelligence Governance Framework (Second Edition) ("**Model Framework**")<sup>2</sup> issued by the Personal Data Protection Commission ("**PDPC**") in 2020 applies to all organisations (including FIs) that use AI solutions in their operations and set out baseline guiding principles for adoption. The guiding principles of the Model Framework are that decisions made by AI should be explainable, transparent and fair and AI systems must be human-centric.
- **Veritas Framework** - The Veritas Initiative, a collaborative project between MAS and the financial industry, provides guidance to FIs to evaluate their AIDA-driven solutions in a systematic and verifiable manner against the FEAT Principles. The Veritas Consortium<sup>3</sup> concluded Phase One in January 2021 where it developed the Fairness Principles Assessment Methodology and applied it to credit risk scoring and customer marketing for the banking sector. Phase Two built

<sup>1</sup> [Principles to Promote Fairness, Ethics, Accountability and Transparency \(FEAT\) in the Use of Artificial Intelligence and Data Analytics in Singapore's Financial Sector](#)

<sup>2</sup> Available [here](#). The Model Framework is accompanied by the [Implementation and Self-Assessment Guide for Organisations](#) and the [Compendium of Use Cases](#) which are made available on the PDPC website.

<sup>3</sup> Comprising MAS and selected members of the financial industry. More information on Veritas and the Veritas Consortium is available [here](#).

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upon the methodology in Phase One and developed the Assessment Methodology for all the FEAT Principles for adoption by banks in credit risk scoring and customer marketing, as well as the insurance industry in predictive underwriting and fraud detection. At the conclusion of Phase Two, the Veritas Consortium published five whitepapers setting out assessment methodologies for the FEAT Principles and case studies (collectively, "**Veritas Phase 2 Documents**"). An open-source toolkit is also made available to facilitate FIs with adoption of the Fairness Principles Assessment Methodology.

This Update provides a high-level introductory overview of the FEAT Principles Assessment Methodology developed in Veritas Phase Two ("**Methodology**") along with some broad regulatory trends and considerations from the Veritas Phase 2 Documents. In drafting internal compliance policies for AIDA, FIs must note that these main regulatory principles and framework regarding the use of AIDA must be applied in addition to and consistent with any policies that FIs have currently implemented for compliance with legislative obligations under the Singapore Personal Data Protection Act 2012 and confidentiality and other customer-related obligations under the Singapore Banking Act 1970 and the Singapore Insurance Act 1966.

## Applying FEAT Principles to AIDA System Development Lifecycle

The Methodology allows FIs to assess in a systematic manner how their AIDA systems are aligned with the FEAT Principles. The Veritas Phase 2 Documents identifies the following groups of persons involved in AIDA system assessments:

- **FI** – The organisation responsible for the AIDA system.
- **AIDA system owner** – This party uses the AIDA system to help make decisions to meet the FI's business goals. The AIDA system owner is part of the FI and acts on its behalf.
- **AIDA system developer** – This party develops the AIDA system and may be part of the FI (if the system is developed in-house) or external to the FI, for instance, a vendor or Fintech firm.
- **AIDA system assessor** – This party assesses the FEAT assessment presented to them by the FI and may be in-house (if the assessment is performed internally), or an external audit firm.

### FEAT Principles

The FEAT Principles centred around the concepts of Fairness, Ethics, Accountability and Transparency are:

#### **Fairness**

Principle 1: AIDA-driven decisions do not systematically disadvantage individuals or a group of individuals, unless these decisions can be justified.

Principle 2: Justified use of personable attributes as input factors for AIDA-driven decisions.

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Principle 3: Regular review and validation of AIDA-driven decisions data and model for accuracy and relevance, and to minimise unintentional bias

Principles 4: Regularly review AIDA-driven decisions to ensure the models are functioning as intended.

There are two aspects to the concept of fairness – justifiability and accuracy. Principles 1 and 2 relate to justifiability and Principles 3 and 4 pertain to accuracy.

### **Ethics**

Principle 5: Aligning use of AIDA with the organisation's ethical standards, values and codes of conduct.

Principle 6: Holding AIDA-driven decisions to at least the same ethical standards as human-driven decisions.

### **Accountability**

Principle 7: Appropriate internal authorisation for use of AIDA to drive decisions.

Principle 8: Firms employing AIDA are responsible for the AIDA models (whether they are developed internally or sourced externally).

Principle 9: Firms using AIDA proactively raise awareness of the Board and management of the firms regarding use of AIDA.

Principle 10: Data subjects affected by AIDA-driven decisions may enquire, appeal and request for reviews of these decisions.

Principle 11: When reviewing AIDA-driven decisions, take into account verified and relevant supplementary data from data subjects.

Principles 7 to 9 relate to internal accountability and Principles 10 and 11 pertain to external accountability.

### **Transparency**

Principle 12: Proactively disclose use of AIDA to data subjects to increase public confidence of such usage.

Principle 13: Clearly explain to data subjects, on request, the data used to make the AIDA-driven decisions and how the data affects the decisions.

Principle 14: Clearly explain to data subjects, on request, the consequences AIDA-driven decisions may have on them.

## **Incorporating the Methodology in AIDA System Development Lifecycle**

In this section, we examine a typical AIDA system development lifecycle, and briefly consider how to embed the Methodology in the AIDA system development lifecycle.

A typical AIDA system development lifecycle involves the following five steps. Some general questions relevant to each step are set out for consideration.<sup>4</sup>

<sup>4</sup> Section 3.1 of Veritas Document 3 - FEAT Principles Assessment Methodology.

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- **Translating principles to practice** – This is the foundational phase and includes defining AIDA, having a framework to define the roles and responsibilities for the AIDA project, having a materiality framework, having an inventory to track material AIDA use cases.
- **Defining system context and design** – This step involves documenting commercial objectives and quantitative measures to achieve them. Other general questions include whether the use of AIDA is justified for the particular objective and the scope boundaries of the proposed system (e.g. specific geographies or segments).
- **Preparing and inputting data** – General questions to this part include whether data used by system is documented, including data pre-processing and engineering. Also, if personal data is used by the system, whether a data protection impact assessment has been done.
- **Constructing and validating the system** – Here, the concerns include whether the composition of the AIDA system is defined and whether it is clear how each component of the system, business rules and human judgement is used to achieve commercial objectives.
- **Deploying and monitoring** – Whether the system's monitoring and review regime is able to detect abnormalities and whether there are fallback and/or mitigation plans to deal with triggers from the system's monitoring and review regime.

The FEAT Principles should be incorporated at both the organisational level and the AIDA system (or use case) level, where relevant. It is important to appreciate that the FEAT Principles are interdependent and the Methodology for each Principle should not be viewed on a standalone basis but as parts of an end-to-end Methodology across an AIDA system. FIs are advised to begin with Ethics and Accountability assessments to define the guiding principles at the organisational level. The Fairness and Transparency assessments are inter-related and specific to use cases, as such they should be done concurrently within the various steps of the AIDA system development lifecycle.

We set out below in broad terms a summary of the Methodology.

### Fairness

Phase One sets out a five-step methodology focussed on Fairness metrics:<sup>5</sup>

- Describe system objectives and context;
- Examine data and models;
- Measure disadvantage;
- Justify the use of personal attributes; and
- Examine system monitoring and review.

Phase Two mapped the five steps onto a typical AIDA system development lifecycle, with updates to include concepts of Ethics, Accountability and Transparency. It also includes more detailed definitions

<sup>5</sup> [Veritas Document 1: FEAT Fairness Principles Assessment Methodology](#)

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of key concepts such as personal attributes, types of bias, mitigation methods, as well as provide guidance on how to identify and apply them to use cases. The Veritas Phase 2 Documents also provide an FI with guidance on how to scale and embed the Methodology across an organisation.

In Phase One, the Methodology was applied to use cases in the banking sector for credit scoring and customer marketing. For details, please refer to "*Veritas Document 2: FEAT Fairness Principles Assessment Case Studies*", available [here](#). In Phase Two, the Methodology was applied to, among other things, predictive underwriting for life insurance, details of which are set out in "*Veritas Document 4: FEAT Principles Assessment Case Studies*", available [here](#).

### Ethics and Accountability

The aim is for FIs to engage in measurable ethical practices that are aligned with the organisations' concepts of ethics and accountability. FIs can find guidance on the framework and workbook on "*Operationalising Ethics and Accountability*" in "*Veritas Document 3B – FEAT Ethics and Accountability Principles Assessment Methodology*", available [here](#). The Operationalising Ethics and Accountability framework sets out a taxonomy of terms to give measurable and concrete meaning to abstract notions, such as "values", "concepts", "principles", "commitments" and "specifications". The terms are defined with accompanying illustration and guidance. Depending on the work undertaken, the stakeholders will differ. For instance, defining and refining the core values of an organisation will involve the CEO office.

Relative to other sectors, FIs have strong governance frameworks to manage risks. As such, FIs are encouraged to build upon their existing governance frameworks with the guiding framework and workbook.

The Methodology has been applied to AIDA systems used in banking and insurance sectors, in the areas of customer marketing and fraud detection, respectively. Details of the illustrative case studies are set out in "*Veritas Document 4: FEAT Principles Assessment Case Studies*", available [here](#).

### Transparency

With the increased use of AIDA to facilitate or replace human decision-making, regulators are concerned with, among other things, how these decisions are made, what data/algorithms are used, and their impact. Apart from being merely viewed as a regulatory compliance issue, transparency is an unmet customer need and FIs that appreciate this point would obtain a competitive advantage by increasing customer confidence.

There are two key aspects that FIs must address when considering AIDA transparency: external and internal. The former involves deciding the level and form of transparency that FIs should provide their customers and other external stakeholders in various situations, and the latter relates to how FIs should develop reliable and verifiable explanations and information to be shared externally while complying with internal policies and regulatory requirements.

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On a broader level, FIs should implement transparency requirements in a scalable fashion (and not a case-by-case basis). Recommendations are provided in the relevant Veritas Phase 2 Documents, for instance, FIs can embed AIDA transparency requirements into their existing risk frameworks, engage in proactive communication with relevant stakeholders, train the relevant persons such as the management and those in risk/control functions, and incorporate transparency considerations throughout the AIDA lifecycle. For details, please refer to "*Veritas Document 3C – FEAT Transparency Principles Assessment Methodology*", available [here](#).

The Methodology has been applied to AIDA use cases in the banking sector for credit risk scoring and customer marketing. Details of the illustrative case studies are set out in "*Veritas Document 4: FEAT Principles Assessment Case Studies*", available [here](#).

## Regulatory Trends and Considerations

Regulator guidance, such as the FEAT Principles provide a baseline set of criteria for responsible use of AI. The Veritas Phase 2 Documents guide FIs as to how to achieve the FEAT Principles, through governance frameworks and control processes that are appropriate to their business operations and risk profiles. An important takeaway is that each Principle will have different implications depending on the context and FIs must conduct a materiality assessment to decide which Principle is relevant and how to mitigate the relevant risks.

We highlight below some main regulatory trends and considerations for FIs when assessing the regulatory implications of development and use of AIDA solutions.

- **Materiality based governance approach**

MAS encourages FIs to employ a risk-based approach towards assessing regulatory considerations. For instance, this means FIs adjust their AI governance model and scale the application of the FEAT Principles depending on the risk tier of the AIDA system.

Conducting a materiality assessment of each AIDA use case is one of the key elements in defining an AIDA governance model. Some factors in determining the materiality of the AIDA system include how much of decision making is done by the AIDA system, level of automation in AIDA-driven decision making process, how complex the AIDA model is and how severe and probable different stakeholders are impacted by these decisions. Different use cases (and complexity of systems) will have different risk tiers. For instance, based on these considerations, credit scoring with auto decline will be classified as a high-risk use case.

Depending on the risk level and risk tiering identified for the AIDA system, FIs are encouraged to proportionately adjust the depth of the FEAT assessment. Some aspects for tailoring the

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Methodology include the extent of analysis and documentation, weighing balance between the FEAT and commercial objectives, frequency and extensiveness of monitoring and the need for external audit. Among other rationale, this avoids additional costs which ultimately gets passed onto customers.

- **Building upon existing risk management and governance frameworks**

FIs can consider embedding FEAT related considerations into existing risk frameworks and governance structures such as frameworks around cybersecurity, data privacy and model risk management framework (or equivalent outside the banking sector). Given that FIs are highly regulated on various fronts including outsourced technology use, risk management etc, these are good starting points for FIs to consider when implementing measures for responsible use of AI.

When implementing AIDA solutions, FIs should identify the regulatory issues relevant to a specific use case. For instance, for data processing by AI, regulatory considerations will include technology laws, cybersecurity laws and risk management practices, for example the relevant MAS risk management practice guidelines.

- **Scalability of FEAT assessment**

FIs should plan to scale their FEAT assessments to AIDA usage across the organisation in a consistent and robust way. The "*Veritas Document 3: FEAT Principles Assessment Methodology*" (available [here](#)) sets out recommendations on how to do so. Some of the recommendations include using a materiality assessment framework and customising the extent of the assessment to the risk tier, as well as incorporating FEAT related considerations into existing risk frameworks and governance structures.

- **Collaborating with technology providers**

It is reported anecdotally that regulators encourage FIs to work together with technology partners to enhance their understanding of how existing internal risk management and governance frameworks can be adapted to embed practices for the responsible use of AI. Technology firms can provide FIs with customisable or off-the-shelf AI solutions and share with them the capabilities and limitations of such solutions. In Singapore, the Veritas Consortium is a good example of how collaborations among these stakeholders can promote responsible usage of AI.

- **Encouraging diverse perspectives and sharing use cases**

When discussing regulatory issues, it is critical to have varied views. This will help to pick up concerns early and to deal with them appropriately. Diversity of perspectives can be achieved by collaborating with different stakeholders (which underscores the point on collaborating with

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technology providers above) and having exchanges between different functions in an organisation. Of course, within teams, diversity should also be reflected in terms of gender, age, ethnic groups, among others.

As highlighted above, the regulatory implications depend on, among other things, the context in which the AIDA system is deployed, sharing of use cases will improve understanding of potential regulatory issues across the relevant industry.

## Concluding Remarks

As FIs increase their use of AIDA to drive and make decisions, FIs are expected to aspire towards achieving and incorporating the FEAT Principles in their AIDA systems. The Veritas Phase 2 Documents are not prescriptive, but serve as baseline guidance for FIs to ask the right questions and deploy AI in a responsible manner that achieves the outcomes of the FEAT Principles.

The next phase will see the Veritas Consortium develop other use cases. The Veritas Consortium will also conduct test runs with certain FI members to integrate the relevant methodologies with the existing governance frameworks of these members.

FIs are recommended to review the white papers in detail and implement the relevant methodologies in a manner that takes into account the specifics of their AIDA systems, use cases and risk profiles.

For a discussion on key legal, commercial and compliance issues for FIs to note when employing AIDA solutions in their operations, please refer to our earlier Client Update titled "*Responsible AI Adoption for FIs – "Fairness Metrics" and Other Legal and Compliance Issues*", available [here](#).

Our dedicated teams will be happy to assist and advise you regarding implementation and other concerns/queries you may have.

Links to relevant source documents are set out below:

- [MAS media release titled "MAS-led Industry Consortium Publishes Assessment Methodologies for Responsible Use of AI by Financial Institutions"](#)
- [Veritas Document 3 - FEAT Principles Assessment Methodology](#)
- [Veritas Document 3A - FEAT Fairness Principles Assessment Methodology](#)
- [Veritas Document 3B - FEAT Ethics and Accountability Principles Assessment Methodology](#)
- [Veritas Document 3C- FEAT Transparency Principles Assessment Methodology](#)
- [Veritas Document 4 - FEAT Principles Assessment Case Studies](#)



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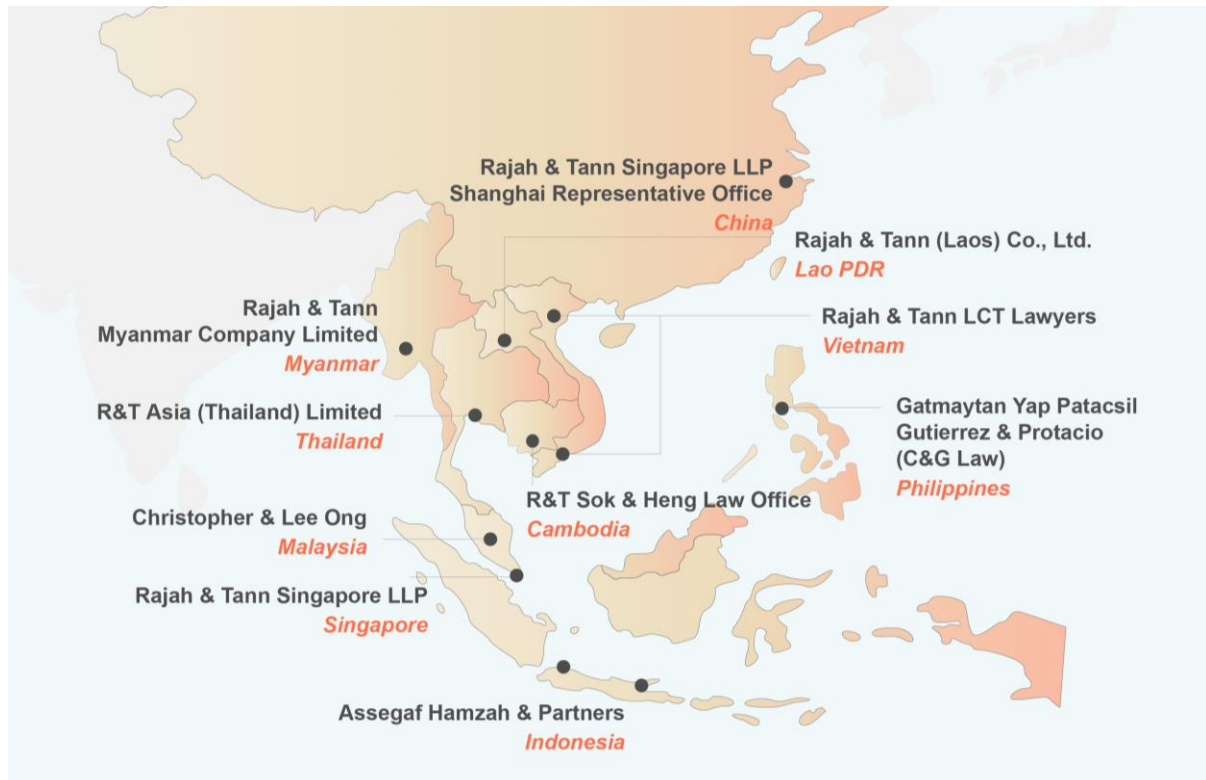
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