National Artificial Intelligence Policy

August 2024

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**Introduction**

In light of the rapid advancement of artificial intelligence technologies and their increasing applications across various fields, it has become essential to establish a framework for governing the use and development of these technologies. This framework aims to ensure optimal utilization while safeguarding national interests and individual rights. Through this policy, the ministry seeks to lay down the foundations and guiding principles for the use and development of artificial intelligence systems and datasets in both public and private sectors. Additionally, it aims to promote innovation and technological progress in this field.

**Definitions and Terms**

**The ministry**: Ministry of Transport, Communications, and Information Technology

**Regulatory Bodies**: These include ministries, public authorities, and institutions responsible for regulating the sectors they oversee.

**Competent Authority**: In the context of this policy, it refers to the government entity responsible for supervising, regulating, or overseeing the development and use of artificial intelligence technologies in the Sultanate.

 **Artificial Intelligence (AI)**: A set of techniques and algorithms that give computers the ability to perform a variety of cognitive and advanced functions that mimic human capabilities, including vision, understanding and translating spoken and written language, data analysis, deriving new knowledge rules, problem-solving, providing recommendations, self-learning, among others to achieve various goals and tasks

 **Ethics**: A set of values, principles, and methods to guide ethical behavior in the development and use of artificial intelligence technologies.

**AI System User**: Any natural or legal person who manages, applies, or utilizes artificial intelligence systems to achieve specific goals.

**AI System Developer**: Any natural or legal person engaged in the development of artificial intelligence systems.

**Data**: A collection of raw facts in their original or unorganized form, such as numbers, letters, images, videos, audio recordings, or emoticons.Top of Form

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**Objectives**

 Through this policy, the ministry aims to achieve the following objectives:

1. Contributing to the realization of the Sultanate's digital economy objectives by utilizing artificial intelligence technologies across various sectors.
2. Creating the enabling environment for artificial intelligence, including both legislative, regulatory, and technological aspects.
3. Enhancing public awareness about artificial intelligence.
4. Encouraging innovation and technological advancement in the field of artificial intelligence in alignment with national priorities
5. Ensuring ethical and responsible use of artificial intelligence technologies in accordance with national values and principles.

**Purpose**

Governance of data and the development and use of artificial intelligence systems in the Sultanate of Oman

**Scope of Implementation**

This policy applies to entities involved in the development or use of artificial intelligence technologies in the Sultanate of Oman, including but not limited to:

* Units of the State’s Administrative Apparatus
* Private sector institutions regulated by regulatory bodies
* Private sector institutions involved in the development or use of artificial intelligence technologies
* Startups and entrepreneurial ventures in the field of artificial intelligence
* Academic and research institutions specialized in artificial intelligence

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 **Policy Provisions**

First: General Provisions:

1. All entities subject to this policy commit to ethical principles in the development and use of artificial intelligence systems, including respect for privacy, fairness, transparency, and accountability based on the National Charter for Artificial Intelligence Ethics issued by the ministry (attached).
2. The ministry commits to creating an enabling environment for the adoption, development, and use of artificial intelligence technologies in the Sultanate.
3. Regulatory bodies are required to align the provisions of this document with their regulatory frameworks and extend them to all affiliated or associated institutions to ensure integration and achieve the intended objectives of drafting this document.
4. Regulatory bodies have the right to establish additional provisions for the use of specific artificial intelligence technologies and algorithms after approval by the ministry.

 **Second: Provisions Related to the Development of Artificial Intelligence Systems**

Entities developing artificial intelligence systems commit to the following:

1. Adhering to the standards and regulations set forth by the national policy on artificial intelligence and the National Charter for Artificial Intelligence Ethics, including ethical, technical standards, and data protection measures.
2. Documenting the development process of artificial intelligence systems transparently and clearly, including the system's purpose, technologies, and data used, and retaining these documents for future reference as needed.
3. Conducting ethical and social impact assessments for artificial intelligence systems before their deployment and use, and documenting the results of these assessments as part of system documentation.

**Third: Provisions Related to the Use of Artificial Intelligence Systems**

Entities using artificial intelligence systems commit to the following:

1. Adhering to the terms and conditions specified by the national policy on artificial intelligence, including ethical and responsible use, and ensuring the privacy and security of data.
2. Providing mechanisms for supervision and human control over sensitive and impactful decisions made by artificial intelligence systems, and ensuring the ability to interpret and trace these decisions.
3. Continuously monitoring the performance of artificial intelligence systems, documenting any errors, deviations, or negative impacts, and taking timely corrective actions as necessary.
4. Providing all relevant documents and information related to the use of the system to competent authorities for verification of compliance with applicable standards and regulations in case of audits or official investigations.

**Fourth: Provisions Related to Artificial Intelligence Data Governance**

Entities developing and using artificial intelligence systems commit to the following:

1. Collecting, storing, and using artificial intelligence data in accordance with the laws and regulations applicable in the Sultanate of Oman, including the Personal Data Protection Law and the Data Protection Policy of government administrative units.
2. Implementing appropriate security measures to protect artificial intelligence data from unauthorized access or misuse.
3. Ensuring the quality and accuracy of artificial intelligence data used in development and training, and avoiding biases and errors

**Fifth: Provisions Related to Transparency and Accountability**

Entities developing or using artificial intelligence systems commit to the following:

1. Providing clear and transparent information about the use of these systems and their potential impacts.
2. Establishing mechanisms for accountability and reporting violations or damages resulting from the use of artificial intelligence systems.
3. Conducting regular audits and reviews of artificial intelligence systems to ensure compliance with applicable standards and policies.

**Policy Management**

1. This policy is owned by the Ministry of Transport, Communications and Information Technology and will be subject to revision whenever necessary.
2. This policy shall be adopted as the date of its approval and circulation by the Ministry of Transport, Communications and Information Technology.

**Policy Compliance**

1. The Ministry of Transport, Communications and Information Technology is responsible of monitoring the compliance of the State’s Administrative Apparatus units to the policy, and presenting the results of compliance and commitment to the Council of Ministers.
2. Regulatory bodies oversee the compliance of sectors under their supervision with the policy.

National Charter for Artificial Intelligence Ethics

August 2024

**Introduction**

Artificial Intelligence (AI) is one of the main pillars of the Fourth Industrial Revolution, which has spawned many smart applications that have contributed to serving humanity, enhancing sustainable development, increasing productivity, and reducing costs through the scientific progress achieved by machine engineering and other sciences. Despite the role of this new revolution in driving economic growth, it will accompany some fundamental changes affecting the economic and security system and related legislative systems, as well as the emergence of new challenges and ethical implications arising from the increased reliance on modern technologies, which has drawn the world's attention to the necessity of establishing an ethical framework defining best practices for AI.

**Definitions and Terms**

**Personal Data**: Data that identifies or can identify a natural person directly or indirectly, by reference to one or more identifiers such as a name, civil number, electronic identifiers, location data, or by reference to one or more factors specific to the genetic, physical, mental, psychological, social, or economic identity of that person.

**Sensitive Data**: Any personal data that includes reference to an individual's racial origin, religious belief, intellectual belief, political opinion, as well as security and criminal data, or biometric data that identifies the individual, or genetic data, or health data.

**Ethics**: A set of values, principles, and methods to guide ethical behavior in the development and use of AI technologies.

**Artificial Intelligence (AI**): A set of techniques and algorithms that give computers the ability to perform a variety of cognitive and advanced functions that mimic human capabilities, including vision, understanding and translating spoken and written language, data analysis, deriving new knowledge rules, problem-solving, providing recommendations, self-learning, among others to achieve various goals and tasks.

**AI System Lifecycle**: The lifecycle expected to be followed by AI developers to design, build, and produce a robust and secure system that provides practical value and insights through a unified and organized way of managing the implementation and delivery of the AI model.

**AI System Technical Structure**: Includes the database (to store information), algorithms (to process data and make decisions), interaction interfaces (such as graphics or voice commands to interact with users), learning systems (to improve performance through new experiences and data).

**AI Model**: A set of predictive models and advanced algorithms that can be used to analyze data and predict the future or facilitate decision-making for expected future events.

**AI System Developer**: Any natural or legal person developing AI systems.

**AI System User**: Any natural or legal person who manages, applies, or uses AI systems to achieve certain goals.

**Data**: A set of facts in their raw form or in an unorganized format such as numbers, letters, images, videos, audio recordings, or emoticons.

**Data Sample**: A portion of the data used to build, train, and test predictive models and AI algorithms to reach specific results.

**Objectives**

* Enhancing the capabilities of public and private sectors in adopting ethical principles related to AI when building and developing AI-based solutions to ensure their safe use.
* Protecting the privacy of data owners regarding the processing of their personal data.
* Keeping up with global trends based on best practices in this field.
* Enhancing Oman's competitive position internationally in areas related to measuring readiness and maturity in AI.

**Purpose**

Establish general rules and ethical practices that should be observed when using or developing AI systems to mitigate potential risks and negative impacts, ensuring responsible and safe use.

**Scope of Implementation**

This charter applies to all government units, private sector entities, academic and research institutions working in the field of developing or using AI technologies in the Sultanate of Oman. It covers all stages of developing and using these technologies, from data collection and storage to the design, training, application, and continuous evaluation and review of AI systems.

**Principles of AI Ethics**

**Justice**: Data samples and data to be analyzed should be selected fairly and objectively without any bias or discrimination.

**Transparency**: AI systems and predictive models should be built with a high degree of transparency and clarity, in an explainable and interpretable manner, with the ability to trace important automated decision-making processes that could cause material or moral harm to the data owner.

**Accountability**: AI systems and predictive models should be subject to accountability by evaluating potential negative impacts and risks when developed or used irresponsibly, with the ability to contest important decisions related to individuals' interests.

**Inclusiveness**: Data samples and data to be analyzed should be comprehensive, diverse, and representative of all segments of society or targeted groups fairly and without any bias or discrimination.

**Humanity**: Predictive models should be built ethically and securely based on human rights and values, ensuring AI systems are used for the benefit of humanity.

**Safety**: AI systems should be built securely to limit machine control, with the ability to control them throughout their lifecycle, ensuring they do not cause any harm.

**Data Quality**: Data samples or data to be analyzed should be accurate, correct, complete, and relevant to the purpose of use, with continuous updating and verification of their quality.

**AI System Lifecycle**

The AI system lifecycle methodology followed in implementing technical solution projects based on AI technologies includes the following main phases:

1. Phase 1: Planning and Design:
* Identifying the problem
* Proposing solutions
* Choosing the appropriate AI technology for the proposed solutions
* Studying associated risks and the feasibility of potential alternatives
* Developing appropriate performance indicators
1. Phase 2: Data Preparation:
* Collecting data
* Exploring and evaluating data
* Verifying data accuracy
* Data quality improvement
* Transforming data to suit AI model inputs
1. Phase 3: Building and Performance Measurement:
* Training and testing the AI model
* Adjusting variables or AI model inputs
* Verifying model performance
* Risk evaluation
1. Phase 4: Application and Follow-up:
* Applying the AI model to the AI system
* Defining versions
* Periodically monitoring model performance
* Evaluating the need for design changes based on periodic review results

**General Controls for Developing and Using AI Systems**

1. **For AI System Developers:**
2. Build fair and inclusive AI systems by training AI systems on bias-free data and developing algorithms to ensure they are unbiased.
3. Commit to transparency when building predictive models and AI algorithms by explaining how algorithms work in an understandable and interpretable way to understand the reasons for reaching specific results.
4. Conduct periodic assessments of the AI system to ensure the accuracy of result interpretations, identify areas needing improvement, and apply corrective measures to improve AI system performance and outcomes continuously.
5. Establish appropriate protection controls to ensure that AI decision-making systems and associated algorithms comply with the privacy and data security requirements of the user entity.
6. Provide a manual intervention mechanism that allows the user entity to trace important decision-making stages and object to decisions related to their vital interests.
7. Adopt a comprehensive methodology to test the quality of systems and predictive models based on data and AI algorithms according to standard practices.
8. Implement controls to prevent or mitigate negative or unwanted outcomes when using AI in automating decision-support systems that could cause harm or discrimination.
9. Use mechanisms and controls to manage and monitor results throughout the AI system lifecycle to ensure compliance with relevant privacy and security rules and regulations.
10. Implement best security practices to ensure these systems can withstand cyberattacks and unauthorized access attempts to data or the model.
11. Test the AI system model to ensure available data does not disclose personal or sensitive data in an unauthorized manner or violate anonymization or coding rules.
12. Implement controls to protect the technical structure of AI systems from potential risks such as damage, alteration, or unauthorized access.
13. Implement a set of standards and protocols to evaluate the reliability of the AI system to ensure the safety of the algorithm and system results, maintaining user trust in the AI system.
14. Implement a mechanism to verify system operation under emergency events and unexpected scenarios.
15. **For AI System Users**:
16. Ensure decision-making criteria are not based on data that identifies the user's personal identity but on the minimum data necessary for the system's proper operation according to the Personal Data Protection Law.
17. Classify all processed data to ensure they receive the appropriate level of protection according to their sensitivity or classification to prevent unauthorized disclosure or improper modification.
18. Limit data analysis to classification levels (Open/Public) and determine if data need processing before analysis.
19. Conduct risk assessments before processing personal or sensitive data according to the Personal Data Protection Law and its executive regulations.
20. Implement data management policies and controls when classifying and structuring data feeding AI systems issued by the ministry and related entities.
21. Prepare and document data retention policies and procedures according to specified purposes and relevant legislation.
22. Restrict the use of data analysis results to the intended purpose and ensure the purpose complies with relevant regulations and policies.
23. Safely destroy data, including archived and backup data, according to approved data disposal policies and relevant regulations and policies.
24. Take appropriate measures to verify the quality, accuracy, and reliability of data to be analyzed and their collection methods.
25. Prepare a detailed record of all data analysis activities, including the date of all data and actions taken on each dataset.
26. Take necessary measures to prevent AI systems from making significant decisions on behalf of individuals or influencing their decisions without their prior consent.
27. **For Protecting Data Used in AI Systems:**

The goal of these controls is to protect data after classification, especially sensitive and personal data, and includes the following:

1. Data De-Identification: Removing personal identity data from any document or other media, including protected health information of individuals.
2. Data Anonymization: Removing elements that enable personal identification from datasets to maintain anonymity and confidentiality of described individuals.
3. Data Masking: Removing or hiding information and replacing it with realistic alternative data or even false information to create a version that cannot be reverse engineered, using methods such as encryption or word/letter replacement.
4. Pseudonymization: A method to hide data ensuring personal data cannot be linked to a specific person without additional secure information, integral to the General Data Protection Regulation in the European system containing many conditions determining how and when to use Pseudonymization data.
5. Data Encryption: A mechanism to hide and protect data from cybercrimes or accidental unexpected incidents, including database contents, emails, instant messages, or files stored on a computer.
6. Data Tokenization: Replacing personal data with random tokens, often keeping the link between original information and the token (such as processing financial transactions on websites), which can be completely random numbers or generated by one-way or multi-directional functions.
7. Data Loss Prevention: Using measures to detect and prevent data breaches, including monitoring network activity, identifying and blocking suspicious behavior, implementing encryption, and access controls.
8. Data Governance: Involves all aspects of data management throughout its lifecycle, including security, uses, availability, and privacy, defining policies and procedures for data processing.
9. Data Minimization: Collecting only the necessary personal data without additional information to reduce risks associated with data breaches and misuse of personal information.

**Document Management**

1. This charter is owned by the Ministry of Transport, Communications, and Information Technology and will be reviewed as needed.
2. The charter becomes effective from the date of approval and dissemination by the Ministry of Transport, Communications, and Information Technology.